

FLIGHT

First Aero Weekly in the World.

Founder and Editor : STANLEY SPOONER.

A Journal devoted to the Interests, Practice and Progress of Aerial Locomotion and Transport.

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TO OUR READERS.

The Supply of "FLIGHT." Important Notice.

Order "FLIGHT" to be either delivered or reserved for you regularly.

As the demand for "FLIGHT" is so great each week, it is of the utmost importance that readers should place their orders *firmly* for copies of "FLIGHT" at the bookstalls, their newsagents, or direct from the publishers, at 44, St. Martin's Lane, W.C., if they wish to secure a copy every week and avoid disappointment. The stringent Government restrictions in regard to the supply of printing paper necessitates this precaution in order that only actual numbers required are printed, and all wastage by unsold copies may thereby be reduced to a minimum, if not eliminated.

THE PUBLISHERS.

EDITORIAL COMMENT.



ARISING out of our comments under this heading in our issue of last week, we have received letters from correspondents which, while we cannot publish them, for reasons which are good and sufficient, bearing in mind the times in which we live, raise certain questions which certainly

bear some amount of discussion.

One letter which lies before us emphasises the point that the almost hysterical comments made by the daily Press on the work of our airmen at the

"Prepare for 1917."

Front, make it not unlikely that the necessity for progress in design may be lost to sight. That was exactly what we had in mind when we wrote as we did a week ago. It is an unfortunate fact that we, as a nation, are far too prone to take things for granted, and to assume that because they are as they are to-day, they will of necessity remain so to-morrow. It is this national characteristic upon which successive administrations have traded, with the result that every crisis, big or small, in which the Empire has found itself involved has discovered us in a state of absolute unpreparedness to meet it. So far, we have never gone to the extreme of hanging anybody for our unpreparedness. Invariably the excuse has been that the nation itself was equally to blame with those who are paid to guide its policy, and that if only the nation had forced the hands of the Government of the day, all would have been well. And the excuse always goes down, and we go on happily in a state of semi-somnolence until the next crisis arises.

The worst of it is that the powers that be too often have a great deal of justice on their side when they advance the excuses we have outlined, since those who stand for public opinion in the Press are generally at considerable pains to assure the nation that all is exactly as it should be. For proof of this we have only to regard for a moment the despatches of some of the correspondents which impelled us to take the line we did. If we accept them at their face value, we must believe that our aerial supremacy on the Western Front is a fact unchallengeable and unalterable. Witness the remark we quoted from one despatch last week, to the effect that in aviation "the Bosche has ceased to exist." That argues that,

so far as the air is concerned, there is no more need for us to worry. We have driven the enemy from the air beyond all hope of his recovery of his lost position. It means that or nothing at all, particularly as the correspondent fails entirely to make it clear that to maintain what we have gained means even more strenuous effort than has been expended in the past to achieve to our present supremacy. Pessimism may be the deadly sin now, but we are not sure that it is not run to a short head, if the expression may be permitted in this case, by the sort of optimism indulged in by newspaper correspondents of the type whose rosy accounts of aerial war in France we are deprecating. They create an entirely false atmosphere by the implication—which is not good for either the public or the official mind—that all is so well that it can never be ill. We have only too good reason to know that nothing is done unless there is more or less force of public opinion at work to lessen official inertia. If the public, therefore, is continuously assured that there is no need for it to express any opinion save that all is well, it almost necessarily follows that the Government will continue along the line of least resistance.

It is quite natural that those who really know what is necessary to maintain our present paramountcy in the air should feel some disquietude in view of the irresponsible chatterings to which we directed attention. That disquietude is apparent in some of the letters we have received bearing on the subject. We cannot say that we do not to some extent share the feeling of anxiety. Paradoxically, perhaps, our anxiety is the outcome of knowledge of the tremendous efforts that have been exerted to place our air service in the position it occupies of being superior at all points to that of the enemy. In this way. We have had to build and equip an enormous number of machines, and, moreover, we have been and are now compelled to lay plans for future construction and equipment very far in advance. That in its turn means a very large degree of standardisation, and standardisation means, unless we are very careful indeed, stagnation of design. There is no getting away from it—there are a dozen illustrations to hand to prove the proposition. And anything in the way of stagnation of that kind is the very last thing to be tolerated now. We are fully prepared to admit—we believe it to be the case—that those responsible for the proper equipment of the air service are alive to the need for progress, but the danger is an insidious one, and therefore needs to be insisted upon.

Unfortunately, it is impossible to be explicit in the illustration of our meaning, for very obvious reasons. But it is possible to generalise in order to make the main points clear. We have now a very large number of machines actually in commission and in course of delivery. Many of these machines are of a type that was excellent a few months ago and superior to any contemporary German type. But construction is an ever-progressing factor as the lessons of war are learnt and appreciated, and it thus follows, as day follows night, that the machine that was *facile princeps* yesterday is obsolescent to-day. It is unfortunately the case that construction cannot keep pace with

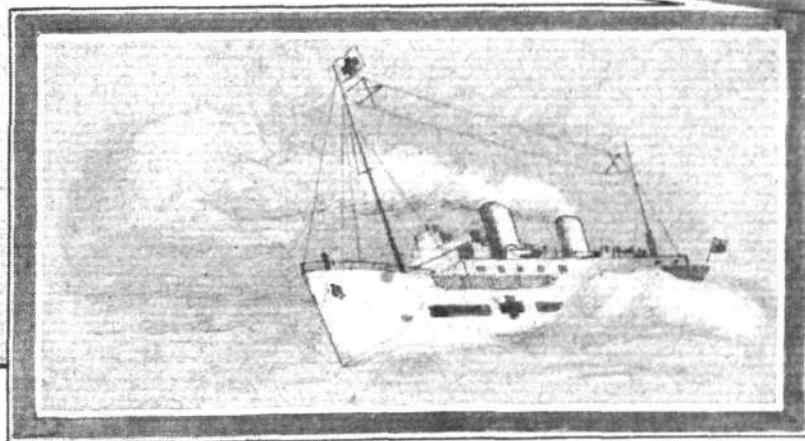
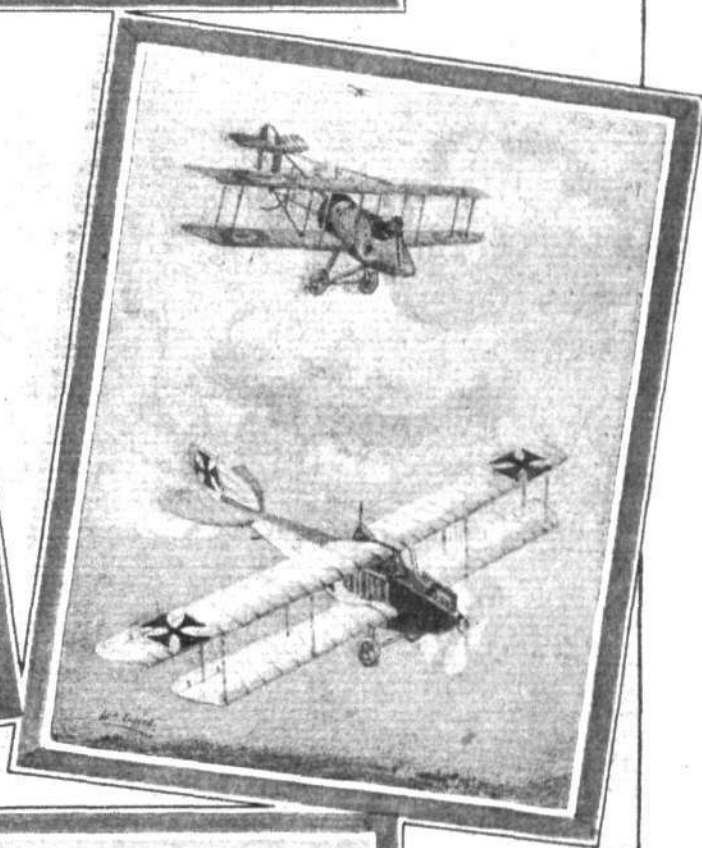
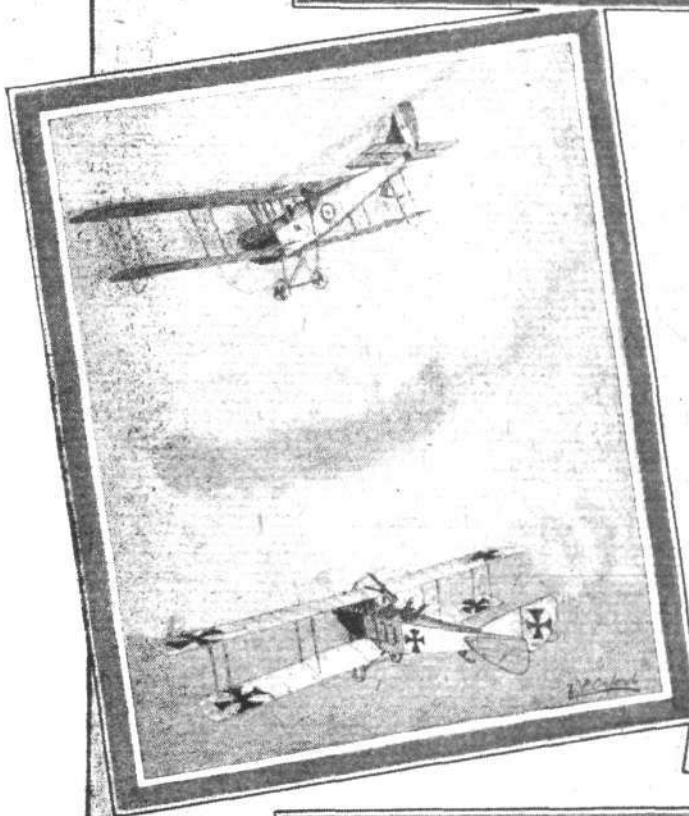
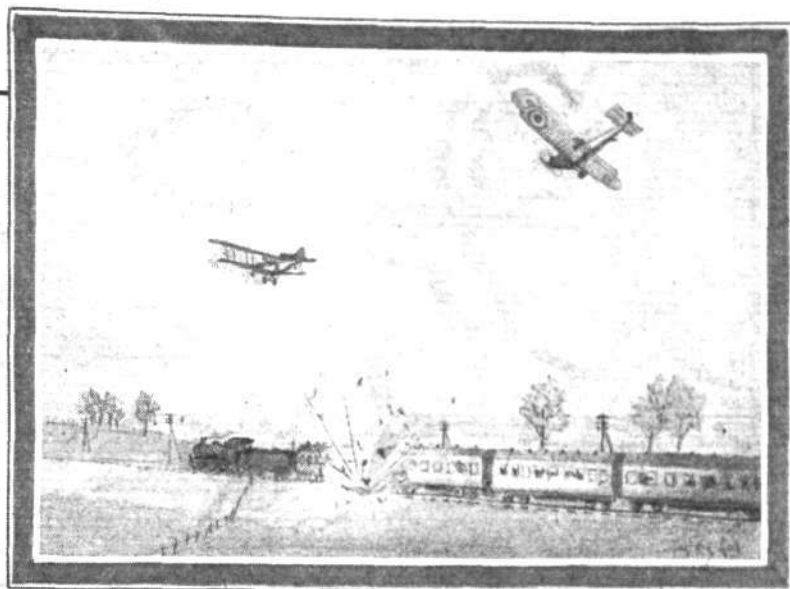
improvement in design, and thus we are compelled to a policy of compromise. It is here lies the danger of the situation, and the more it is persisted that all is well the greater is the danger.

It is during the coming winter that we shall have to prepare for the spring and summer of 1917. That preparation does not only connote the building of a greater number of machines than the enemy can turn out, but they must be of types certainly not inferior to the best he can put into the air. If our scheme of construction provides for numbers of machines of obsolescent type, then it must be rigorously revised with a view to replacing them with a better. Undoubtedly there are in use a very large number of machines that have been well described as "good, but not quite good enough." It may mean scrapping these already in commission and cancelling contracts for identical types not yet delivered. To do that would mean financial loss, but whatever that loss, it would be cheap at the price. What we have got to aim at is that when the good flying weather comes in the early spring our air service shall be as definitely on top of the Germans as it has been during the autumn of this year. It can be done if the right policy is followed now, and, in our view, that policy must be to cut losses, however they arise. If it is a question of compensation to contractors for work partially completed, then let the compensation be forthcoming. If it is a question of ruthlessly scrapping a hundred or even a thousand "good" machines, then let them be scrapped in favour of better. Incidentally, it need not necessarily mean the actual scrapping of large numbers of machines, since those of the "good" types can be used for other purposes than actual "strafing" operations. But no more of them must be built. If that is the policy we are going to pursue, then there is no need to fear the result of the 1917 struggle for command of the air. If, on the contrary, the policy is to be one of following the line of least resistance, the result is much more doubtful.

What about the Air Board?

Seven weeks ago the Air Board report was circulated to the Cabinet. Since then there has been almost endless discussion of the Air Board and its organisation, both in the Press and arising out of questions in Parliament, but apparently nothing has resulted. At least, nothing has transpired publicly to give rise to the impression that the report and all connected with it has not followed so many other reports of the kind into the limbo of official pigeon-holes. The question of the best manner of co-ordinating the needs of the two branches of the Air Service is so directly related to preparation for next year's campaign, that it would be impossible to refer to the one without touching upon the other.

There is nothing to be added to what we have written on other occasions on this pressing subject. Therefore, we do not intend to do more at the moment than reiterate the question: What about the Air Board? Is anything going to be done or not? Is the Cabinet afraid to tackle the subject for some reasons that are not fully apparent, but which have been hinted at? The matter is a serious one, and



AIRCRAFT AT THE FRONT IN FRANCE.—Another series of sketches by Gunner W. C. Orford of the R.F.A., of his impressions of "scraps," &c., in the air out somewhere in France. All these drawings have been made actually on the spot, under very trying conditions, and Gunner Orford himself has just been invalided home, shot through the left knee, after being in France one year and four months without a day's leave, a record which should give many young fighting men still comfortably at home much to ponder over.

demands an answer without delay. Whether the Parliamentary Air Committee will succeed in getting a satisfactory statement of the position when the resolution standing in its name comes to be debated in the House of Commons remains to be seen. But if the answer is not forthcoming then, we are gravely mistaken if the country does not insist on more information than is available at present. These are not times when there should be any hesitancy in clearing King Log out of the way.

A Shock for the Mohmands.

There is a lot behind the bald official announcement, contained in a *communiqué* of the Secretary of State for India, relating to a recent frontier fight with Mohmands, to the effect that: "For the first time in Indian warfare aeroplanes were used, and afforded great assistance." We have become so used to the aeroplane in war that it comes almost as a shock to read that it has been used "for the first

time" in any warlike operations. Doubtless, the great assistance of which the *communiqué* speaks lay as much in the moral effect produced by the strange birds of Eblis on the Mohmand *morale* as in the information they were able to bring in. One thing that does strike us, though, is that the aviation service of the Indian Army must have been a long way behind if it is only now that aeroplanes have come into use in frontier fighting. We have had no really big affairs up there for some years now, but the border is never at peace, and scarcely six months can pass without it being necessary to undertake military operations of some sort. It is in little "shows" of the sort that the aeroplane ought to have proved itself invaluable. However, better late than never. It would be interesting to have the Mohmand comments on this new departure in war. They would probably avail us very little, for the opinions of the frontier tribesmen on the devices of the Feringhi are generally quite unprintable, even when they can be translated.

THE ROLL OF HONOUR.

REPORTED by the War Office:—

Killed.

2nd Lieut. C. H. Bidmead, Shrop. L.I. and R.F.C.
2nd Lieut. C. J. Creery, R.F.C.
2nd Lieut. E. S. P. Hynes, Buffs (E. Kent) and R.F.C.,
2nd Lieut. W. Jordan, R.F.C.
2nd Lieut. H. G. P. Lowe, R.F.C.
2nd Lieut. C. E. MacRae, Seaforth Hdrs., attd. R.F.C.
5710 1st Air Mech. H. T. J. Thake, R.F.C.
10023 2nd Air Mech. J. Banks, R.F.C.

Previously reported Missing, now reported Killed.

2nd Lieut. W. D. Miller, R.G.A. and R.F.C.
2nd Lieut. H. J. Newton, Ches., attd. R.F.C.
Capt. J. L. Whitty, M.C., Leinster, and R.F.C.

Previously Unofficially, now Officially, reported Killed.

2nd Lieut. C. Monckton, R. Irish Fus., attd. R.F.C.

Died of Wounds.

2nd Lieut. J. Allan, R.F.C.
2nd Lieut. A. A. Paterson, Border, attd. R.F.C.

Previously reported Missing, now reported Died as a Prisoner of War in German hands.

Lieut. J. A. N. Ormsby, Mach. Gun Brig., attd. R.F.C.

Died.

20012 2nd Air Mech. R. F. Reynolds, F.R.C.

Wounded.

Capt. W. T. L. Allcock, R.F.C.
Lieut. A. D. Bell-Irving, Gordon Hdrs., attd. R.F.C.
2nd Lieut. N. Brearley, M.C., King's (Liverpool), attd. R.F.C.
2nd Lieut. J. D. Cowie, Argyll and Suth. Hdrs. and R.F.C.
Lieut. G. E. Goolden, A.S.C. and R.F.C.
2nd Lieut. T. Hayes, R.F.C.
Capt. G. H. Norman, R.F.C.
2nd Lieut. H. C. Short, R.F.C.
2924 Flight Sergt. J. Helingoe, R.F.C.
9557 2nd Air Mech. W. Horsley, R.F.C.

Missing.

2nd Lieut. M. Allport, R.F.C.
Lieut. T. M. Bennet, M.C., R. Irish Rifles, attd. R.F.C.
Capt. A. C. Bolton, M.C., R. Scots Fus., attd. R.F.C.
2nd Lieut. J. G. Cameron, Cameron Hdrs., attd. R.F.C.
2nd Lieut. I. Curlewis, R.F.C.
2nd Lieut. H. F. Evans, R.H.A. and R.F.C.
2nd Lieut. H. A. Hallam, York and Lancaster, attd. R.F.C.
Lieut. G. F. Knight, Devonshire, attd. R.F.C.
Capt. T. Mapplebeck, King's (Liverpool), attd. R.F.C.

Previously reported Missing, now reported Prisoners of War in German hands.

2nd Lieut. M. S. Faraday, R.F.A. and R.F.C.
Lieut. J. W. Sanders, Middlesex, attd. R.F.C.

Correction:

Wounded.

2nd Lieut. W. C. Crawford, Mach. Gun Corps and R.F.C., should read: 2nd Lieut. K. Crawford.

Air Work in Mesopotamia.

A DESPATCH from Sir Percy Lake dealing with the operations in Mesopotamia from the fall of Kut up to August, when he relinquished the command to General Maude, was published last week. In the course of the despatch Sir Percy Lake says:

"As regards aviation, the superiority of certain of the hostile aeroplanes over any of our machines in the matter of speed, combined with a large reduction in the number of our pilots (due to sickness partly attributable to overwork), enabled the enemy in May and June to establish what was very nearly a mastery of the air.

"With the arrival of more pilots from home matters improved, until in August three of our machines, working together, forced the best enemy machine, a Fokker, to descend, seriously damaged, in its own lines.

Air Work on Indian Frontiers.

THE following was issued by the Secretary of State for India on November 18th:—

"On 14th inst. the Government of India reported that large Mohmand forces, estimated at 6,000, were collecting on the

border opposite Shubkadr. Our troops engaged them on the 16th. The enemy were too scattered to offer a good target for guns. For the first time in Indian warfare aeroplanes were used, and afforded great assistance. The enemy losses are reported to be about 100 killed or severely wounded. Our casualties were one man killed and ten wounded. The Mohmand forces have apparently withdrawn, for a reconnaissance on the next day only located a very small party."

A Government Aeroplane Factory in Canada.

ACCORDING to messages from Ottawa, it is officially announced that a Dominion Government aeroplane factory is to be established in Canada, probably in Toronto, at a cost of approximately \$1,000,000. It will be equipped to turn out six machines weekly, and they will be purchased by the British Government. This arrangement is said to be the result of an inquiry conducted by members of the Imperial Munitions Board which found that large orders for aeroplanes had been placed in the United States. Representations were made therefore to the Ministry of Munitions to the effect that the industry, with proper organisation, might be built up in Canada.

The British Air Service

"PER ARDUA AD ASTRA"

UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, it is not repeated in this column.

Royal Naval Air Service.

Admiralty, November 15th.

E. G. Walker granted temp. commission as Lieut., R.N.V.R., with seniority Nov. 14th.

Admiralty, November 18th.

Temp. Lieut.-Com., R.N.V.R., G. Holmes promoted to temp. com., with seniority Nov. 16th.

Admiralty, November 20th.

P. M. Davson granted a temp. commission as Sub-Lieut., R.N.V.R., and appointed to the "President," additional, for R.N.A.S., to date Nov. 18th.

H. D. Dall, C. E. Skinner, and W. O. Spinks entered as warrant officers, second grade, for temp. service and appointed to the "President," additional, for R.N.A.S., to date Nov. 18th.

The undermentioned have been entered as prob. flight officers for temp. service, to date as stated:—F. D. J. Silwood, Nov. 26th; H. Nixon, Nov. 19th; and G. F. F. Read, Nov. 26th.

Royal Flying Corps (Military Wing).

London Gazette Supplement, November 13th.

Balloon Officers.—Oct. 26th: 2nd Lieut. (Temp. Lieut.) K. M. Cattley, R. Suss. R. (T.F.); Lieut. A. Knight, N. Lan. R., from Machine Gun Corps, and to remain secd.; 2nd Lieut. (on prob.) C. Booth, E. Surr. R., and to be transfd. to Gen. List; Temp. 2nd Lieut. G. K. Cathles, Gen. List; 2nd Lieut. C. Deards, S.R.; 2nd Lieut. H. Y. C. Clarke, S. Wales Bord., and to be secd.; 2nd Lieut. (Temp. Lieut.) C. M. Down, Herts. R. (T.F.); 2nd Lieut. J. B. Mendham, R.W. Fus. (T.F.); Temp. 2nd Lieut. J. S. Giffard, Manch. R., and to be transfd. to Gen. List; Temp. 2nd Lieut. H. F. Fuller, D. of Corn. L.I., and to be transfd. to Gen. List; Temp. 2nd Lieut. H. F. Darby, E. Surr. R., and to be transfd. to Gen. List; Temp. 2nd Lieut. W. A. J. Gribble, Gen. List.

London Gazette, November 14th.

Flying Officers.—Oct. 22nd, 1916: 2nd Lieut. (Temp. Lieut.) H. W. Hepburn, Manch. R. (T.F.); Temp. 2nd Lieut. (on prob.) H. E. Rahtkens, Gen. List. Oct. 25th: Lieut. G. W. Devenish, R.A., from a Flying Officer (Obr.) with seniority from July 1st: 2nd Lieut. (Temp. Lieut.) P. J. Long, A.S.C., and to be seconded; Temp. 2nd Lieut. J. W. Shaw, Oxf. and Bucks. L.I., and to be transferred to Gen. List; 2nd Lieut. C. C. White, S.R.; Oct. 26th. Oct. 27th: Temp. Lieut. H. W. Woollett, Linc. R., and to be transferred to Gen. List; Temp. 2nd Lieut. T. H. Elliott, R.A., and to be transferred to Gen. List; Temp. 2nd Lieut. (on prob.) G. F. Tuberville, Gen. List; Lieut. J. D. Belgrave, Oxf. and Bucks. L.I., and to be seconded; 2nd Lieut. A. F. Quinlan, R. W. Kent R., and to be seconded; Temp. 2nd Lieut. A. S. Keep, R. War. R., and to be transferred to Gen. List.

Equipment Officers, 3rd Class.—Oct. 30th: 2nd Lieut. (Temp. Capt.) J. C. Briggs, Leic. R. (T.F.); Temp. 2nd Lieut. (on prob.) J. S. Berdoe, Gen. List; 2nd Lieut. (on prob.) G. Dennison, S.R.; 2nd Lieut. (on prob.) H. L. U. Clark, S.R.; 2nd Lieut. (on prob.) G. Urquhart, S.R. Temp. 2nd Lieut. (on prob.) H. Dear, Gen. List; Oct. 31st. 2nd Lieut. E. E. Cutts, S.R.; Nov. 2nd.

Memoranda.—The undermentioned to be Temp. 2nd Lieuts. (on prob.) for duty with R.F.C.: Sergt. J. H. Thorpe; Sept. 12th. 2nd Class Air Mech. W. H. Scanlan, from R.N.A.S.; Sept. 26th.

Supplementary to Regular Corps.—2nd Lieut. (on prob.) E. D. Doring resigns his commission. Nov. 15th: The undermentioned 2nd Lieuts. (on prob.) are confirmed in their rank: C. C. White, E. S. Halford, C. Curwen, C. C. Bracebridge, R. W. Davies, E. Holloway, A. Hingston.

London Gazette Supplement, November 15th.

Flight Commanders.—From Flying Officers: Temp. Lieut. A. W. Keen, Gen. List, and to be Temp. Capt. whilst so employed; Oct. 22nd. Capt. T. Mapplebeck, L'pool. R.,

S.R.; Nov. 1st. Lieut. A. D. Bell-Irving, M.C., Gordon Highrs., S.R., and to be Temp. Capt. whilst so employed; Nov. 3rd.

Flying Officers.—Temp. 2nd Lieut. J. W. L. Birkbeck, Durh. L.I., and to be transferred to Gen. List; Oct. 20th. Oct. 26th: 2nd Lieut. C. G. Brodie, Lond. R. (T.F.); 2nd Lieut. C. T. L. Donaldson, Queen's Own Glasgow Yeo. (T.F.); 2nd Lieut. T. R. C. Birkin, 7th D.G., and to be seconded; Temp. 2nd Lieut. (on prob.) J. FitzHugh, Gen. List. Oct. 27th: Temp. 2nd Lieut. J. P. Morkam, Northn. R.; Temp. 2nd Lieut. (on prob.) R. K. Jenkins, Gen. List; 2nd Lieut. (on prob.) M. Johnstone, S.R.; Capt. W. Ashton, Worc. R., S.R., and to be seconded; 2nd Lieut. L. G. D'Arcy, Conn. Rang., S.R., and to be seconded. 2nd Lieut. J. E. Edgar, S.R.; Oct. 28th. Oct. 29th: 2nd Lieut. F. O. Baxter, Ind. Army Res. of Off.; 2nd Lieut. (on prob.) W. H. Cox, R. Fus., S.R., and to be seconded; 2nd Lieut. (Temp. Lieut.) O. E. Ridewood, S. Wales Mtd. Brig., A.S.C. (T.F.); 2nd Lieut. D. E. P. Chaplin, R.A., and to be seconded. Oct. 31st: 2nd Lieut. (Temp. Lieut.) C. E. M. Pickthorn, A.S.C., S.R., from a Flying Officer (Obr.), with seniority from June 25th; 2nd Lieut. H. G. M. Horne, Lond. R. (T.F.); Temp. 2nd Lieut. (on prob.) J. E. Blake, R.E.; Temp. 2nd Lieut. F. Bissicks, Gen. List.

Equipment Officers, 2nd Class.—From Equipment Officers, 3rd Class: Nov. 1st: Lieut. E. W. J. Payne, S.R.; 2nd Lieut. O. H. Frost, Middx. R. (T.F.), and to be Temp. Lieut. whilst so employed; 2nd Lieut. B. F. Crane, S.R., and to be Temp. Lieut. whilst so employed. Lieut. V. F. P. Bryce, S.R.; Nov. 4th.

Memoranda.—Cadet D. G. Robinson to be Temp. 2nd Lieut. (on prob.) for duty with R.F.C.; Sept. 10th. Jeejeebhoy Pinoshaw Bomanjee Jeejeebhoy to be Temp. Hon. 2nd Lieut. on Gen. List. for duty with R.F.C.; Nov. 6th.

Supplementary to Regular Corps.—The undermentioned 2nd Lieuts. (on prob.) are confirmed in their rank: J. E. Edgar, N. L. Knight. The undermentioned to be 2nd Lieuts. (on prob.): P. R. Aitken; Oct. 27th. W. G. Duffield; Oct. 28th.

London Gazette Supplement, November 16th.

Flight Commanders (from Flying Officers, and to be Temp. Cpts. whilst so employed).—Lieut. T. J. Mallory, Lan. Fus., S.R.; Nov. 2nd. Temp. 2nd Lieut. W. L. Clark, Gen. List; Nov. 3rd.

Equipment Officers, 3rd Class.—Oct. 1st: Lieut. (Temp. Capt.) G. F. Lucas, York. R. (T.F.); Temp. 2nd Lieut. W. J. King, Gen. List. 2nd Lieuts., S.R.—C. C. Bracebridge, C. Curwen, R. W. Davies, A. Hingston, E. Holloway, E. S. Halford.

Supplementary to Regular Corps.—2nd Lieut. E. F. Allen relinquishes his commission; Nov. 17th.

London Gazette, November 17th.

Supplementary to Regular Corps.—The undermentioned 2nd Lieuts. (on prob.) are confirmed in their rank: M. Johnstone, C. S. O'Grady, A. C. Kiddie, G. T. Pettigrew, J. H. B. Foss, G. D. Harrison. The undermentioned to be 2nd Lieuts. (on prob.): Alfred Burgess; Oct. 24th. F. W. Elstob; Nov. 2nd. O. C. Holleray; Nov. 6th.

London Gazette Supplement, November 18th.

The undermentioned to be Temp. 2nd Lieuts. (on prob.):—

For duty with R.F.C.—Oct. 15th: Co. Sergt.-Maj. Instr. G. B. Neale, from Lond. R. (T.F.); Corpl. C. J. Strother, from R.F.C.; Corpl. C. H. Parker, from R.F.C.; Pte. F. P. Lambert, from Lond. R. (T.F.). Oct. 16th: Staff-Sergt. T. J. Legate, from Can. Infy. Brig.; Sergt. F. G. Brockman, from Lond. R. (T.F.); 1st Class Air Mech. C. J. Pell, from R.F.C.; Pte. T. B. Jones, from Can. Corps, Cav. Regt. Oct. 17th: Mech. Staff. Sergt. R. Cameron, from A.S.C.; Pte. L. L. Brown, from Can. Divnl. Supply Co.; Staff-Sergt. N. Liddall, from A.S.C. Oct. 20th: Corpl. J. G. Plester, from R.F.C. Oct. 21st: Corpl. A. M. Turnbull, from R.E.; Oct. 22nd. Oct. 23rd: Acting Sqdrn. Sergt. Maj. W. R. P. Allen, from Northn. Yeo. (T.F.); Sergt. L. G. Fauvel, from

York Dns. (T.F.); Lce.-Corpl. H. C. Reade, from Shrop. L.I.; 2nd Class Air Mech. A. H. Steele, from R.F.C.

Flying Officers.—2nd Lieut. F. G. Russell, R.F.A., S.R., from a Flying Officer (Obr.), with seniority from March 24th, 1916; Oct. 30th. Oct. 31st: Lieut. (Temp. Capt.) S. Hooper, R.F.A. (T.F.); 2nd Lieut. W. J. Potts, R.F.A. (T.F.); 2nd Lieut. G. T. Pettrigrew, S.R.; 2nd Lieut. C. S. O'Grady, S.R.; 2nd Lieut. A. C. Kiddie, S.R.; Temp. 2nd Lieut. P. C. E. Johnson, Gen. List.

London Gazette Supplement, November 20th.

Flying Officers.—Temp. 2nd Lieut. P. H. Davy, Yorks. L.I. and to be transferred to Gen. List; Nov. 1st. Nov. 2nd: Capt. C. W. Rowe, Hunts. Cyclist Bn. (T.F.); 2nd Lieut., on prob.) J. D. V. Holmes, S.R.; Temp. 2nd Lieut. M. A. Kay,

Gen. List. 2nd Lieut. (Temp. Lieut.) C. W. Short, M.C., Ind Army Res. of Off.; Nov. 3rd, but with seniority from May 30th.

Equipment Officers, 3rd Class.—Oct. 31st: Temp. 2nd Lieut. (on prob.) R. E. Wakelin, Essex R., and to be transferred to Gen. List; Temp. 2nd Lieut. (on prob.) H. S. Wilkins, Gen. List; 2nd Lieuts., S.R.—R. M. Ward, D. A. Pearson, A. W. Barlow; 2nd Lieuts. (on prob.), S.R.—J. Page, T. M. Wilson, R. G. Watts, G. Barfoot-Saunt, J. Farquharson, A. E. Blackmore, S. F. Feast, G. T. Bridgewater. Temp. 2nd Lieut. S. Mills, Gen. List; Nov. 3rd.

Supplementary to Regular Corps.—The undermentioned 2nd Lieuts. (on prob.) are confirmed in their rank: A. W. Barlow, D. A. Pearson, R. M. Ward.



HONOURS FOR THE R.F.C.

In the *London Gazette* of November 14th it was announced that His Majesty the King has been graciously pleased to approve of the appointments of the following officers to be Companions of the Distinguished Service Order, in recognition of their gallantry and devotion to duty in the field:—

2nd Lt. PATRICK ANTHONY LANGAN-BYRNE, R.A. and R.F.C.

He has shown great pluck in attacking hostile machines, often against large odds. He has accounted for several. On one occasion, with two other machines, he attacked 17 enemy machines, shot down one in flames, and forced another to land.

2nd Lt. CLAUDE ALWARD RIDLEY, M.C., R. Fus. and R.F.C.

For judgment in the execution of a special mission. When his machine was wrecked he showed great resource, and obtained valuable information.

It was further announced that the King has been pleased

to confer the Military Cross on the following officers in recognition of their gallantry and devotion to duty in the field:—

2nd Lt. ERIC NOEL DOUGLAS BARR, R.A., S.R., and R.F.C.

For conspicuous gallantry and skill in an encounter with an enemy machine. By skilful manoeuvring 2nd Lt. Barr and Lt. Lander drove the enemy machines behind the enemy's lines in a damaged condition.

Capt. CHARLES HUBERT BOULBY BLOUNT, R.W. Surr. R. and R.F.C.

He has organised the contact patrol work of a new squadron, and has carried out valuable work in the air himself. On one occasion he flew for a long time at about 500 ft. under heavy fire to locate a battalion which was lost.

2nd Lt. A. V. BURBURY, York. R. and R.F.C.

For conspicuous skill and gallantry. When observing from a balloon at a height of 3,000 ft., the cable was cut by a shell. He destroyed his papers, ripped the balloon—a most difficult operation in the air—and then got down in his parachute.

2nd Lt. PATRICK COLIN CAMPBELL, Argyll and Sutherland Highlanders, S.R., and R.F.C.

For conspicuous skill and gallantry on many occasions. On one occasion, seeing a cavalry patrol held up, he came down to 600 ft., dropped bombs on the enemy and enabled his observer to enfilade the hostile trench with machine-gun fire. Finally, his engine was put out of action by rifle fire from the ground.

Temp. Capt. REGINALD CHADWYCK, R.F.C.

He dived down to a low altitude, attacking a train, displaying great courage and determination.

Lt. SYDNEY HERBERT CLARKE, Wilts. R., S.R., and R.F.C.

He has done fine photographic work, often working far over the lines and being heavily attacked by superior numbers of enemy machines. On one occasion, with another officer, he brought down one of five enemy machines which had attacked him.

2nd Lt. IVAN CURLEWIS, R.F.C.

He attacked an enemy machine, which he drove off. Later, he destroyed an enemy machine, and brought down a balloon under very heavy fire, displaying great courage and determination throughout.

Temp. Lt. WILLIAM GEORGE SELLAR CURPHEY, Gen. List and R.F.C.

He brought down an enemy machine, and two days later attacked and brought down another. He has frequently attacked formations of hostile aircraft and driven them down.

2nd Lt. CHESTER STAIRS DUFFUS, R.F.C., S.R.

For conspicuous skill and gallantry in fights with hostile aircraft. On one occasion, after hard fighting, he brought down a hostile machine in flames on our side of the line.

Temp. Lt. (Temp. Capt.) ERNEST LESLIE FOOT, Gen. List and R.F.C.

For conspicuous skill and gallantry. When flying a single-seater scout he dived on to five hostile machines, which were flying at about 2,500 ft., and drove one to the ground as a wreck. On many other occasions he has shown great determination when fighting enemy machines.

Lt. ROBERT PARSONS HARVEY, 5th Lrs. and R.F.C.

He attacked four hostile machines with great courage and skill, his observer shooting one of them down. He has on many previous occasions done very fine work.



Flight Commander Ball, Sherwood Foresters and R.F.C., who was on Saturday invested by the King at Buckingham Palace, with the D.S.O. and two bars (the first man with this honour) and the Military Cross. Capt. Ball is at the wheel of an Oldsmobile.

Temp. 2nd Lt. RODERIC MAXWELL HILL, North'd. Fus. and R.F.C.

For conspicuous skill and gallantry. Under very heavy fire he dived at an enemy balloon and brought it down in flames. On the day before he had dived at a balloon under heavy fire at a low altitude, but had just missed his mark.

2nd Lt. CHARLES STANLEY HOLLINGHURST, R.F.C., S.R.

For conspicuous skill and gallantry on contact patrol work. On one occasion he was attacked first by four and then by three enemy machines, but drove them all off and continued his patrol. On another occasion his observer was hit, and his machine badly damaged by anti-aircraft fire, but he came back for another machine, and went out again. Two days later he was wounded by flying over the lines at 1,000 ft.

2nd Lt. ROBERT JAMES HUDSON, R. Fus., S.R., and R.F.C.

He carried out artillery reconnaissances with great courage and determination. Later, on three occasions, diving to a low altitude, he engaged parties of infantry with his machine gun.

2nd Lt. RALPH HENSWORTH JARVIS, R.F.C., S.R.

While observing, he engaged and drove off three enemy machines, after which he returned and completed his work. Later, he carried out a valuable reconnaissance during a very strong gale. He has on many previous occasions done fine work.

2nd Lt. LEONARD CAMERON KIDD, R.F.C., S.R.

For conspicuous skill and gallantry on contact patrol work. On one occasion he carried out three contact patrol flights, each 1,000 ft., and obtained valuable information under heavy fire. He also attacked enemy reinforcements with a machine gun from a height of 500 ft.

2nd Lt. ARTHUR GERALD KNIGHT, R.F.C., S.R.

He has shown great pluck in fights with enemy machines, and has accounted for several. On one occasion, when a hostile machine was interfering with a reconnaissance, he attacked at very close range, and brought down the enemy machine in flames.

Lt. THOMAS EATON LANDER, High. L.I. and R.F.C.

For conspicuous gallantry and skill in an encounter with an enemy machine. By skilful manoeuvring, Lt. Lander and 2nd Lt. Barr drove the enemy machine behind the enemy's lines in a damaged condition.

2nd Lt. CECIL ARTHUR LEWIS, R.F.C., S.R.

For conspicuous skill and gallantry. He has done fine work in photography, with artillery and on contact patrols. On one occasion he came down very low and attacked a column of horsed limbers causing casualties and scattering the limbers.

Temp. 2nd Lt. FREDERICK LIBBY, Gen. List and R.F.C.

As observer, he, with his pilot, attacked four hostile machines and shot one down. He has previously shot down four enemy machines.

Temp. 2nd Lt. FRANCIS STEELE MOLLER, Gen. List and R.F.C.

During a raid he dived 1,500 ft., and dropped his bombs on an ammunition train. He then chased three other trains, and attacked them with great courage and skill.

2nd Lt. (Temp. Capt.) ROGER HENRY GARTSIDE NEVILLE, D. of Corn. L.I. and R.F.C.

He is a fine leader of patrol work, and has done much to keep enemy machines away from our lines. On one occasion, flying in a rain-storm, after nearly colliding with an enemy machine, he pursued it and brought it down half a mile from an enemy aerodrome.

2nd Lt. GEORGE PHILIPPI, Dns., S.R., and R.F.C.

He dived at a hostile balloon under heavy fire, and brought it down in flames. Though wounded in the head, he brought his machine back at a low altitude, and landed safely in his aerodrome.

2nd Lt. (Temp. Lt.) GEOFFREY WARD ROBERTS, R.F., S.R., and R.F.C.

For conspicuous skill and gallantry when attacking hostile machines. On one occasion, when on offensive patrol, he brought down two machines.

2nd Lt. HUGH ANSELM BOULTON ROBB, R.F.C., S.R.

He has done fine artillery work in all weathers. On one occasion, while flying a new type of machine, his engine failed, but he glided back over the lines under heavy fire, and landed his machine without damage on ground pitted with shell holes.

2nd Lt. ARTHUR JOHN GRAHAM STYRAN, R.A. and R.F.C.

He has done fine work with artillery for a long time, often in bad weather and under heavy fire. On one occasion he directed the fire of nine batteries on the enemy's trenches, and obtained a large number of direct hits.

Lt. (Temp. Capt.) JOHN HUGH SAMUEL TYSSSEN, N. Som. Yeo. and R.F.C.

For conspicuous skill and gallantry. He has done fine work in photography, often fighting against odds in order to get his work done. On one occasion, when five enemy machines interfered with our patrol, he, with another officer, dived at one and brought it down.

Capt. ADOLPH ANDRE WALSER, Lond. R. and R.F.C.

He carried out a most valuable artillery reconnaissance under very heavy fire, displaying great courage and determination. He has on many previous occasions done fine work.

Temp. 2nd Lt. JOHN SCOTT WILLIAMS, Gen. List and R.F.C.

For conspicuous skill and gallantry when attacking enemy machines. On one occasion, with another officer as pilot, he brought down two enemy machines.

Temp. 2nd Lt. GEOFFREY HUNTER WOOD, Gen. List, attd. R.F.C.

He has continually done contact patrol work, obtaining most valuable information, and displaying great courage and determination throughout.

2nd Lt. CHARLES HENRY CHAPMAN WOOLLVEN, Devon. R. and R.F.C.

He dived down to a low altitude, attacked a train, causing many casualties, and displayed great courage and determination throughout.

2nd Lt. (Temp. Capt.) CHARLES SERVICE WORKMAN, Sco. Rif. and R.F.C.

He and his pilot dived down to a low altitude, attacked a train, causing many casualties, and displayed great courage and determination.

The following has been awarded a 2nd Bar to his Military Cross for a subsequent act of conspicuous gallantry:—

2nd Lt. (Temp. Capt.) SIDNEY EDWARD COWAN, M.C., R.F.C., S.R.

He fought a long contest with seven enemy machines, finally bringing one down in flames. He has displayed great skill and gallantry throughout. (M.C. awarded in *Gazette* dated May 31st, 1916. The 1st Bar awarded in *Gazette* dated October 20th, 1916.)

The following has been awarded a Bar to his Military Cross for subsequent acts of conspicuous gallantry:—

2nd Lt. (Temp. Lt.) MALCOLM GLASSFORD BEGG, M.C., Rif. Bde., S.R., and R.F.C.

He has on many occasions carried out successful contact patrol work at low altitudes, rendering most valuable reports and displaying great courage and determination. (M.C. awarded in *Gazette* dated September 22nd, 1916.)

In the list of awards of the Distinguished Conduct Medal for acts of gallantry and devotion to duty in the field appeared the following:—

1396 Sergt. T. MOTTERSHEAD, R.F.C.



Fatal Accidents.

At Montrose on November 16th an aeroplane piloted by Lieut. Fowler, Royal Flying Corps, collided with the chimney of a house and remained fast on the roof. The impact caused the petrol tank to catch fire, and before assistance could be rendered the pilot was dead, though whether death was due to burning or to the collision is not known.

A verdict of "Accidental Death" was returned at an inquest on November 16th at Boldre in the case of Lieut. H. E. Byers. The evidence showed that the machine made a vertical dive from a height of 3,500 ft., and it was surmised that the deceased was seized with illness while in the air, as apparently the machine was in good order and nothing was seen to break while it was being flown.

THE BURANELLI-CARISI "PUSHER" BIPLANE.

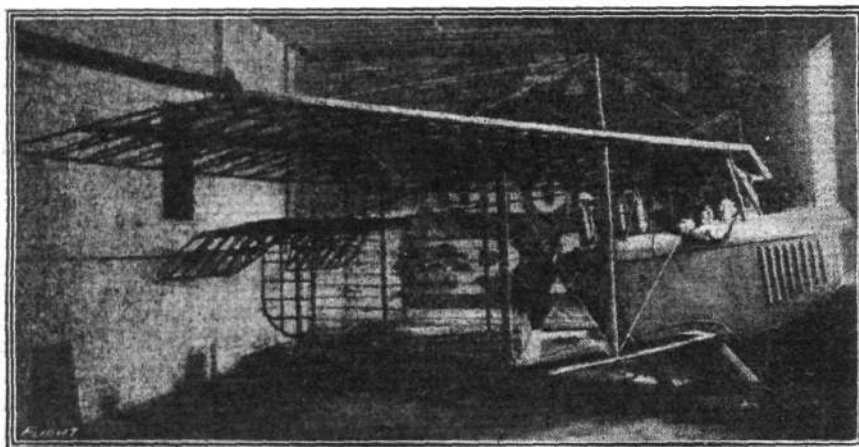
SEEING that America has not done very much in the way of "pusher" biplanes of the headless *nacelle* type, and inasmuch as the gun 'bus is claiming no small amount of attention from designers at the present moment, special interest attaches to the machine, recently designed in America, illustrated in the accompanying scale drawings. This machine has been jointly designed by Mr. Vincent J. Buranelli and Mr. John Carisi, and was built some little time back in New York.

Although the Buranelli-Carisi, or "A.B.C." biplane, as it is named for the sake of brevity, might be said to belong to the Henry Farman type of biplane, it really differs from it in some of the essential features, *i.e.*, the main planes are swept back, the top plane has a considerable overhang, and only one pair of interplane struts on either side of the *nacelle* separate top and bottom planes. There are, of course, other less radical differences in minor details.

The top plane has a span of 40 ft. and a chord of 5 ft. 6 ins., whilst the lower plane has a span of 22 ft. and a chord of 4 ft. 6 ins., and both are swept back

struts, of spruce, are exceptionally strong and well streamlined. A wing-section giving high speed and maximum lift is employed.

The tail planes are similar in form to those on the Henry Farman, being carried in the same way by four outriggers of 1½-in. steel tubing with wood struts, vertical and horizontal. The forward ends of the top outriggers are attached to the top of the upper plane rear spar, just above the interplane strut, and the rear ends come to a point at the vertical post to which the rudder is pivoted. The latter, it will be seen, is slightly staggered forward, somewhat on similar lines to the first Vickers gun-'bus exhibited at the 1913 Olympia Show. The lower outriggers are similarly mounted on the lower plane. The horizontal stabilising plane is mounted on the top outriggers, and has an area of 27 sq. ft. The elevators, measuring 2 ft. by 5 ft., are hinged to the trailing edge of the stabilising plane, one on either side of the rudder, which is of 10 sq. ft. area and partly balanced. The attachment of the stabilising plane is by special fittings which allow different angles of incidence to be



THE 100 H.P. BURANELLI-CARISI PUSHER BIPLANE IN COURSE OF CONSTRUCTION.

The 100 h.p. Buranelli-Carisi pusher biplane in course of construction.

10°. The trailing edges of both top and bottom planes are in line, thus giving the effect of staggering the planes. The planes are divided into five sections, two lower and three upper. The lower plane sections are mounted direct on to the *nacelle*, whilst the two innermost sections of the upper plane are anchored to two inverted V pylons of spruce struts mounted on the *nacelle*. All the mountings of these different sections are of the hinged quick detachable type, facilitating transport. The upper plane extensions measure some 12 ft. each, being braced by Roebling cable of 4,000 lb. tensile strain from pylons mounted on the extremities of the inner plane-sections above the interplane struts. A rather unusual feature for a machine of this type is that lateral balance is maintained by warping the top-plane extensions instead of employing *ailerons*.

The planes are built up on solid I section spars with built-up ribs of similar section. The front spar of the upper plane is situated close to the leading edge, and the rear spar some distance from the trailing edge, whilst in the lower plane the front spar, which like the rear spar is of substantial width, forms the leading edge itself. Both top and bottom planes are wire braced between the spars, and Irish linen doped with Emaillite is used for the covering. The interplane

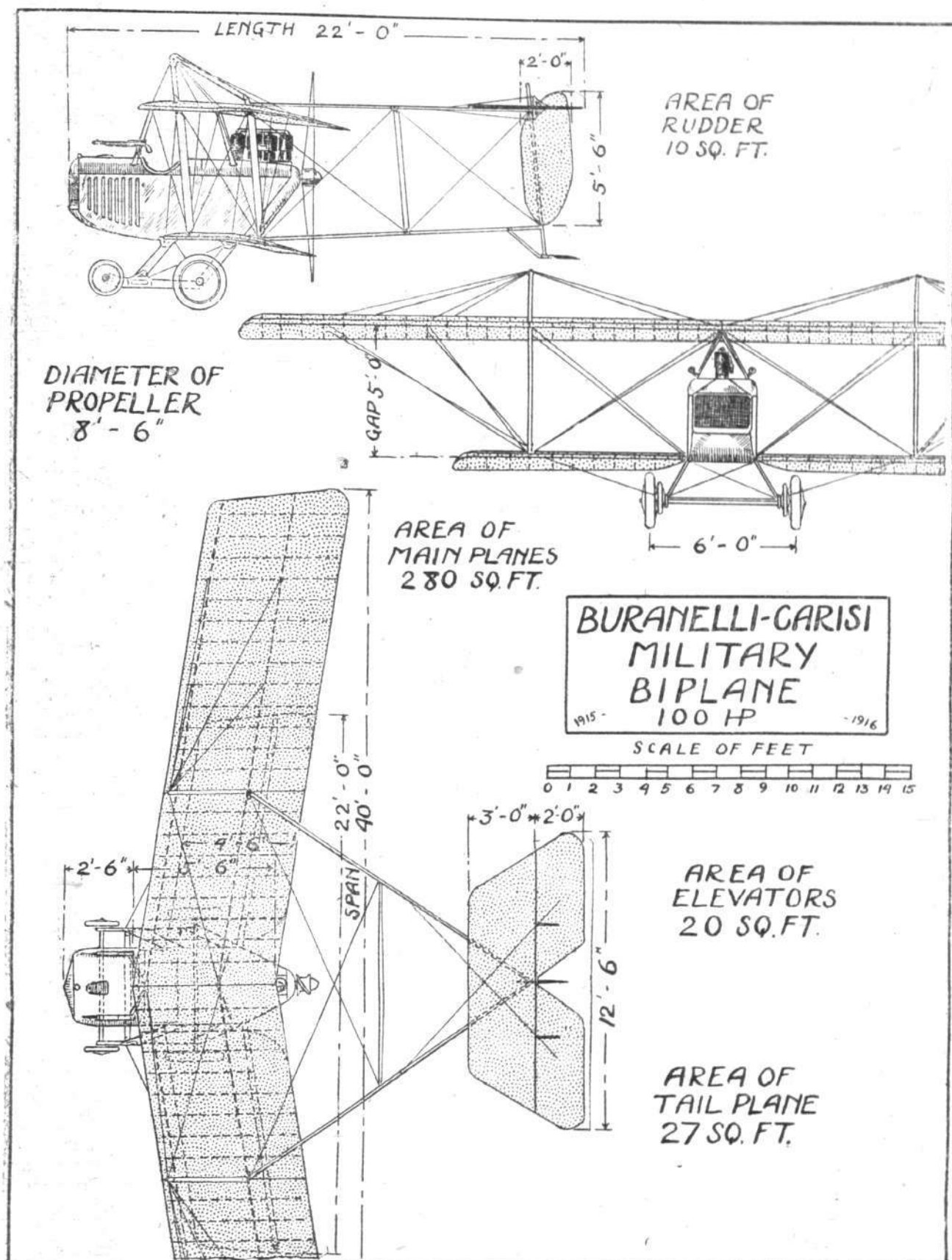
made. The construction of the various tail surfaces follows that of the main planes.

The *nacelle* is deep and roomy, and well streamlined. It is built up of stout longitudinals and struts, in such a manner that they serve as bracing members, thereby dispensing with wire bracing. It is about 10 ft. in length, 3 ft. wide and 3 ft. 6 ins. maximum depth. The engine is mounted on strong ash bearers at the rear. The nose of the *nacelle* is formed by the radiator, which is of the pointed or "Metallurgique" type. Behind are the pilot's and passenger's seats arranged side by side, in front of which is provision for mounting two machine guns. The *nacelle* is covered with Duralumin throughout. Formed integral with the *nacelle*, the fuel tank has a capacity of 40 gallons of petrol, which is force-fed to the engine. The latter is of 100 h.p., having four vertical cylinders, and has been designed by Mr. Buranelli and Mr. Carisi on the lines of the Austro-Daimler engines.

The landing chassis is of the four-wheel type, and appears to be exceptionally strong. The two main wheels, measuring 26 ins. by 4 ins., are mounted under the lower plane, being supported in two stout struts by rubber shock absorbers. Two skids, each connected to the *nacelle* by a second pair of struts, extend from the main wheels, and carry at their forward

extremities the two smaller wheels which prevent the machine from turning over on its nose in the event of a bad landing. Both pairs of wheels are mounted on tubular axles, and the skids are connected by a cross strut, which, together with the wire bracing, considerably strengthens the undercarriage.

The control is on Nieuport lines, a wheel, operating the rudder, mounted on a rocking column which operates the elevators, whilst warping is effected by a foot bar. The calculated speed is given as 40 to 70 m.p.h., and some promising results should be forthcoming from this machine.



THE 100 H.P. BURANELLI-CARISI PUSHER BIPLANE.—Plan, side and front elevation to scale.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

New Members.

In accordance with the rules, the Annual Subscription of any New Member who is elected between November 1st and December 31st of this year, will cover the period up to December 31st, 1917.

Suspension of Entrance Fees of New Service Members.

Until further notice, Service Members will be elected to the Royal Aero Club without Entrance Fee.

New Club Premises.

The arrangements for the alterations, decorations, furnishing, &c., of the New Club House are in the hands of a special Committee and the work is progressing very satisfactorily. There will be a billiard room, smoking lounges, buffet, reading and writing room, dining room and bedrooms. The house is situated within three minutes' walk of the present Club premises.

THE FLYING SERVICES FUND administered by THE ROYAL AERO CLUB.

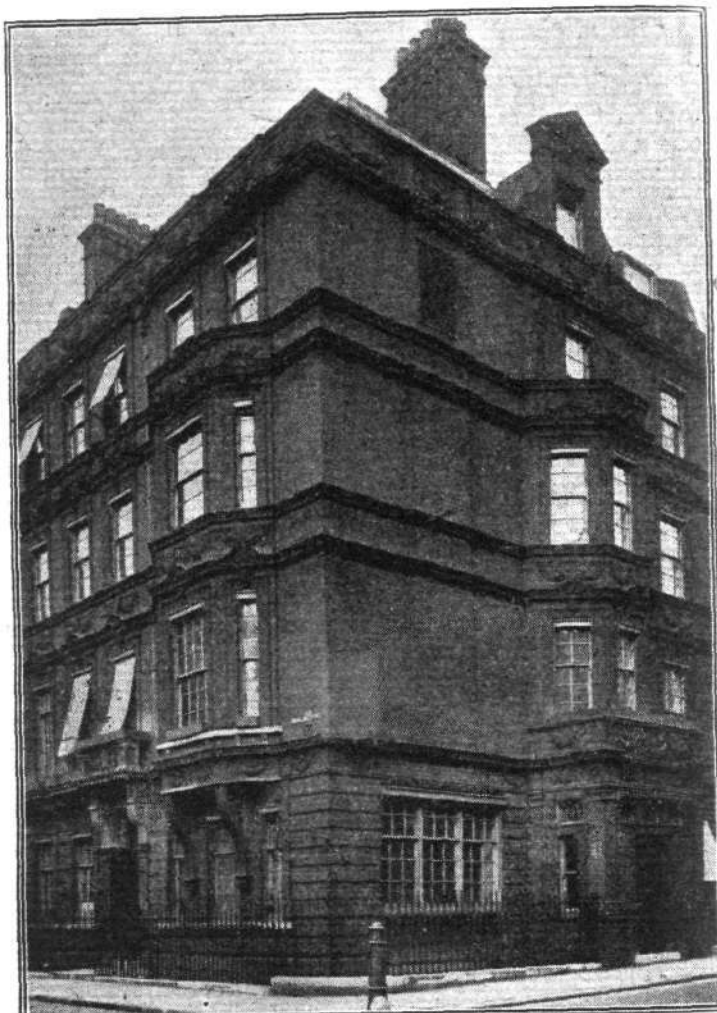
THE Flying Services Fund has been instituted by the Royal Aero Club for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependants of those who are killed.

The Fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers, and men.

Forms of application for assistance can be obtained from the Royal Aero Club, 166, Piccadilly, London, W.

Subscriptions.	£	s.	d.
Total subscriptions received to Nov. 14th, 1916	10,897	2	4
Employés of Ruston, Proctor and Co., Aircraft Works (Thirteenth contribution) ..	1	10	0
Collected at the Westland Aircraft Works, Yeovil (Fifty-seventh contribution) ..	0	15	5
Proceeds of Concert given by Ratings of the Royal Naval Air Service at Wormwood Scrubbs and the White City ..	100	0	0

Total, November 21st, 1916 .. 10,999 7 9
166 Piccadilly, W. B. STEVENSON, Assistant Secretary.



The Car.

No. 3, Clifford Street, New Bond Street, W. The new premises of the Royal Aero Club which will be opened in December.

AVIATION IN PARLIAMENT.

The Royal Aircraft Factory.

MR. R. LAMBERT, in the House of Commons on November 14th, asked whether the Royal Aircraft Factory, Farnborough, is a controlled establishment; and, if not, whether the War Office has power to prevent a man from getting his discharge and obtaining work elsewhere?

Mr. Forster: The War Office has the power mentioned in the second part of the question, under an Order made by the Minister of Munitions under Section 7, Munitions of War Act, dated July 14th, 1915.

The Royal Naval Air Reserve.

MR. BILLING asked whether the First Lord of the Admiralty threatened to tender his resignation if the Royal Naval Air Service was included in the recent Air Inquiry; and whether the Lords of the Admiralty have threatened to tender their resignation if any steps are taken to remove from the sphere of their control the Royal Naval Air Service?

The Prime Minister: The answer to both parts of the question is in the negative.

Report on the Air Board.

CAPTAIN BENNETT-GOLDNEY asked the Prime Minister whether he will in due course order that the Report of the Air Board shall be laid upon the Table of the House, or, if this course should be considered inadvisable on military grounds,

if members will be given an opportunity to see it privately, or, if necessary, to hear its contents during the proposed Secret Session?

The Prime Minister: The first Report by the President of the Air Board is a document of a highly secret character. So far as my own knowledge and responsibility extend, its contents have only been communicated to members of the War Committee, and are engaging the Committee's close attention. The Report embodies certain proposals and recommendations affecting at least three Departments, the Admiralty, the War Office, and the Ministry of Munitions, whose considered views on those recommendations have yet to be submitted to the War Committee. I hope to be in a position shortly to make a statement to the House on the subject. I certainly do not think it desirable that the Report in its entirety should be laid on the Table. I am not prepared at present to state whether or not it is advisable that the Board's proposals should be discussed in Secret Session.

Mr. Billing, on November 16th, asked if it is proposed to lay Lord Curzon's Report on the Air Service upon the Table of the House?

Mr. Bonar Law: I would refer the hon. member to the written answer I gave to the hon. member for the Canterbury Division on the 14th inst., to which I can add nothing.

Mr. Billing: Can the right hon. gentleman say at what time it is likely that this Report will be considered?

Mr. Bonar Law: By the House?

Mr. Billing: No, by the Government.

Mr. Bonar Law: Certainly at an early date—next week at the latest.

Mr. Ashley: May we not at least have this Report before the debate on the powers of the Air Board?

Mr. Bonar Law: I think not. It was a very confidential document.

Naval Anti-Aircraft Corps.

Mr. GLANVILLE asked whether the conditions of Service men enrolled in the Naval Anti-Aircraft Corps involving duty on alternate days only are liable to alteration without the men having the opportunity to resign from the corps; and whether the men can be transferred to any other arm of the Service or of the Army without their consent?

Dr. Macnamara: The Anti-Aircraft Corps is being brought into line with all other branches of His Majesty's Service according to the terms of the Military Service Acts. All men of military age are being medically examined, and as the number of men in the corps exceed the number required, men will be given their discharges in accordance with their medical classification, commencing with Class A. No guarantee can be given that men retained in the corps who are liable to serve under Military Service Acts will in future only be employed every other day or night as in the past. They will perform the same amount of duty as the military who man the remainder of the London Anti-Aircraft defences. The amount

of duty performed by the men over military age who are volunteers will remain as in the past, but the hours may be slightly adjusted if it can be arranged. There will be no question of transference to any other arm. Men not required will be given their discharge, and their names forwarded to the Director of Recruiting. He, however, has been requested to allow men who have been in the Anti-Aircraft Corps to join the Artillery if they prefer it to any other arm of His Majesty's Forces.

Sir C. Henry, on November 15th, asked the Secretary of State for War the number under the age of 30 at present engaged in the Anti-Aircraft Service in this country; and whether it is the intention to transfer men suitable for active military service from this branch, and to replace them by men who it has been decided are not eligible for active service?

Mr. Forster: The process of replacing men fit for general service by Home service men is being carried out. Such a substitution must, however, be a matter of progressive adjustment as the substitutes become sufficiently trained.

Fatal Accidents in the R.F.C.

MR. BILLING, on November 16th, asked how many airmen belonging to the Military Wing, Royal Flying Corps, have been killed in this country during the last 12 months whose deaths may be attributable to preventable or unpreventable accidents?

Major Baird: The total number of fatal accidents from all causes in the Royal Flying Corps, Military Wing, in this country in the last 12 months is 98.

Another Military Aerodrome for Japan.

ARRANGEMENTS have been completed by the Japanese military authorities for a new aerodrome at Kagami-gahara in the Gifu prefecture. The ground has an area of about 72 acres, and it is expected that a battalion of the Japanese Flying Corps will take up its quarters there in the New Year.

A Japanese Aero Motor.

THE prize of 20,000 yen offered by the Imperial Aero Society of Japan for the most practical aeroplane motor in Japan has been awarded to Mr. Shimadzu Narazo, of Osaka. No details are yet to hand with regard to the design. The presentation ceremony in the Ueno Park was attended by Prince Kuni, the Marquis Okuma, &c.



GERMAN OFFICER PILOTS WHO HAVE BEEN RECIPIENTS OF SOME OF THE 430,000 ODD IRON CROSSES SAID TO HAVE BEEN DISTRIBUTED.—Attention has been drawn frequently to the prodigality with which Iron Crosses are showered broadcast among German officers, but it is a popular mistake to compare the Iron Cross with our Victoria Cross. As a matter of fact, it would be more correct to say that the Iron Cross corresponds to our Distinguished Service Medal, or to the French "Médaille Militaire." That German pilot officers have reaped a large share of the coveted recognition is evident from the accompanying photographs, which have appeared in *Flugsport*. In the above illustration the pilots are, reading from left to right: Lieut. Behl, Lieut. Stabl, Lieut. Vierling, Lieut. Sendel, Capt. Stadelmeyer, Lieut. König, Lieut. Hailer, and Lieut. Schlemmer. Inset, Capt. Karl Albrecht.



WHEN I buy those little penny magazines for women at the bookstall, which I do sometimes, finding them interesting reading, I take care that I am unobserved by any but the stall attendant. An insatiable appetite for reading places me in the position of being able to digest anything except a railway timetable, and the pretty covers of these assuasive—or is it augmentative?—components of female romance, latent or active, will generally wheedle a coin from my pocket.

At home by my fireside, where there are none to discover me in my inquisitiveness *re* matters feminine, I may read at my pleasure. Not that I am interested in the latest in that which is spelled lingerie, whatever its pronunciation. It is the stories that have an attraction for me, in that they are written in a style, and with a delightful disregard for anything approaching feasibility with regard to relative possibilities entirely outside the ability of mere man to imitate.

I say this advisedly, because it seems pretty clearly established by the context of these stories, that feminine imagination is behind the pen that gives them birth. A man does not speak of any one of his fellows as a *nice* man, although he may err in his selection of an adjective when one of the opposite sex is in his eye. A woman writer will cheerfully so prefix both, and when she brings both sexes with the same appellation into one story I can settle down comfortably in my chair and await developments.

"Sybil sat by the silent stream in deep soliloquy." The art of story-writing is to grip your reader's interest in the first sentence. As the title of the story led me to suppose something embracing aviation, I was just a little disconcerted, but my interest was gripped precisely as intended a few lines lower, when, "throwing her head back, and stretching both arms to heaven, she cried in sweet, dulcet tones, 'Oh, I love him, I love him!'"

Now when a sweet little bundle of prospective bliss throws her arms on high and yells her inmost secret to any one of the four winds of heaven that may be in evidence at the moment, there is something in the air. And there was. The mysteries of the transference of information by the native tribes of India were as nothing to this magic call of love, for she was calling to her aviator lover on duty in far-away France. "Hardly had the words passed her lips when her prayer was answered. The hum of an aeroplane throbbed through the air, and settling light as a bird, her lover was soon by her side." There are some of us old enough to be able to venture the opinion that when an outburst like the above takes place with ourselves as the objective, it is not so much a prayer as a declaration of hostilities. But what I am most concerned with—and I shall certainly endeavour to get someone I know to ask the question

where such questions are asked—is, how is it that service pilots use service machines to fly from France on week-end visits to dimples and blushes by silent streams in "far-off Devon"—(Devon is always "far off," wherever one may be); and whether the Hon. Member will undertake to give an undertaking under the D.R.A., having in view the possible shortage of petrol, that service machines shall not in future be used for these purposes, and whether the said pilot did or did not fill in form 0001A, before doing as he ought not to have done? I say I know someone who may place these questions, with others of equal momentous import, where such questions receive "the consideration they deserve."

But Sybil was coy. Having got what her little heart most yearned for, she spun about like a biplane with a shortage of tail area and asked him "how he dared?" Nor would she promise anything definite in the way of possessive privileges until he had returned whence he came and brought back her only brother, who years ago had guyyed with the family cashbox or something, to a forgiving father.

Back he went to France, without filling in any forms or performing any frillings, "on his lonely quest." Personally, I cannot conceive a lonely airman flying all over France with his eyes on the ground seeking a young blood who had mistaken the old man's banking account for his own. Doubly hard would it be, for the simple reason that the absconding one might have very reasonable grounds for not wanting to be found. However, it is on the authority of the authoress that "three weeks later, there landed at Southampton" (Plymouth would have been nearer) "two men who bore the gift of joyous life upon their sunburned faces," & etcetera, and so forth. By rights there should have been three men, and one should, like Eugene Aram when he set out from Lynn, have "walked between, with gyves upon his wrists," but this would have killed the story and considerably discounted the hero's chances of future hapiness.

So the story went the way the writer intended it should go, and the pair turned up at the paternal residence prepared for a good large helping of the fatted calf. Turned up in the nick of time too, by all accounts, for the mother was bathing her daughter's forehead with vinegar water or something, she having repented driving her lover to what might be his death, and having gone into a decline of some sort accordingly in orthodox manner. The old man pretended to be obdurate, and swore it was no wish of his that Egbert should ever set step over his threshold again, but the daughter forgot her decline to the extent of putting her two arms about his neck and snuggling down as women know how to snuggle. Then he cried and said "My boy, my boy!" and Sybil snuggled the other Johnnie and said "My man, my man!"

AERODYNAMICAL PROPERTIES OF THE TRIPLANE.*

By J. C. HUNSAKER, Eng. D., and T. H. HUFF, S.B.

General Problem.—The demand for increased size and weight of aeroplanes, especially seaplanes, must be met without material increase in the landing speed. On this account the wing loading remains at about 5 lb. per sq. ft., and for an aeroplane of fourfold the ordinary weight the wing area must be increased in like proportion. Monoplane construction is obviously impractical for such great spread of wings, and even the customary biplane arrangement leads to a span from tip to tip of wings of over 100 ft. The difficulty of handling and housing such a great structure has

lift the triplane requires some 6 per cent. more power than the corresponding biplane. At 4° incidence the ratio of lift to resistance is 13.8 for the biplane against 12.8 for the triplane.

Experiments on R.A.F. 6 Profile.—The experiments were conducted in the Wind Tunnel of the Massachusetts Institute of Technology, on wing models made of laminated maple scraped to a profile known as R.A.F. 6† to the nearest 0.005 in. Each aerofoil was 15.75 in. span by 2.5 in. chord, giving an aspect ratio of 6.3. The models were all tested at a wind

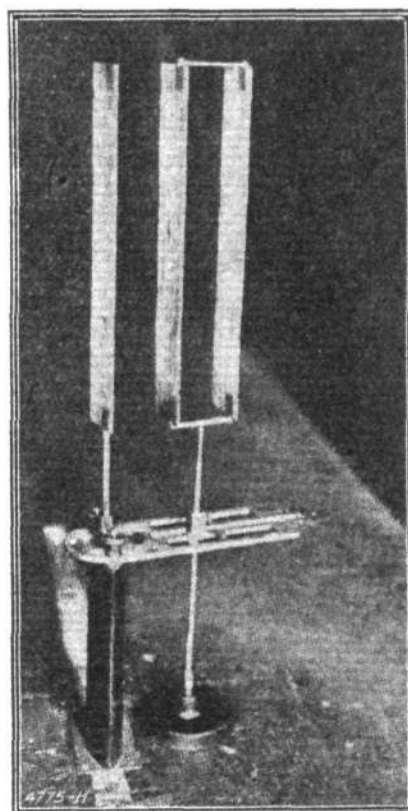
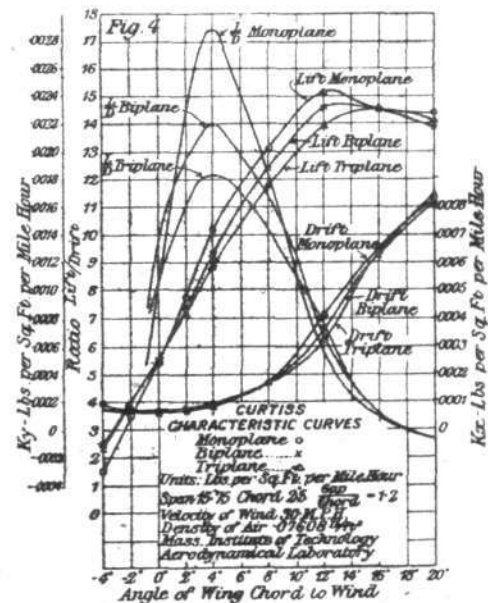
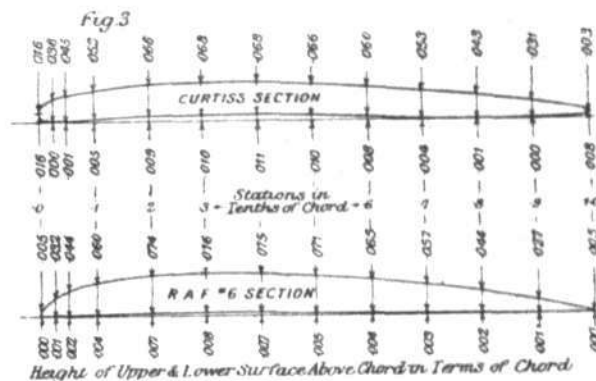
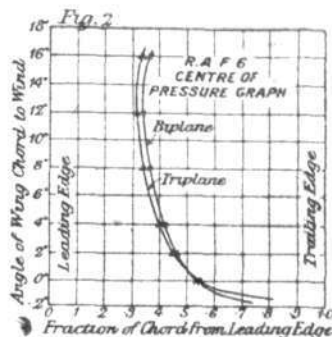
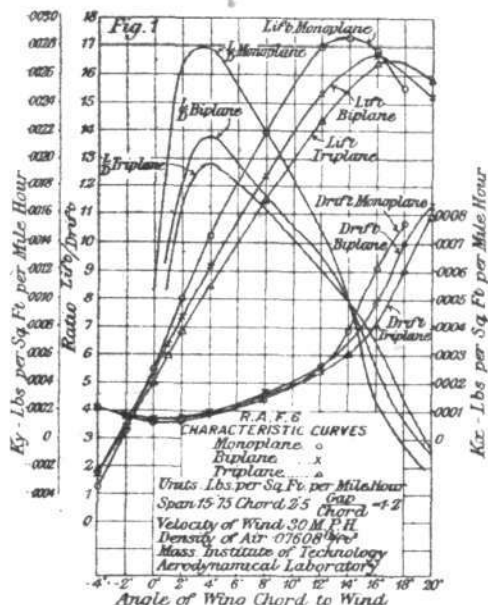
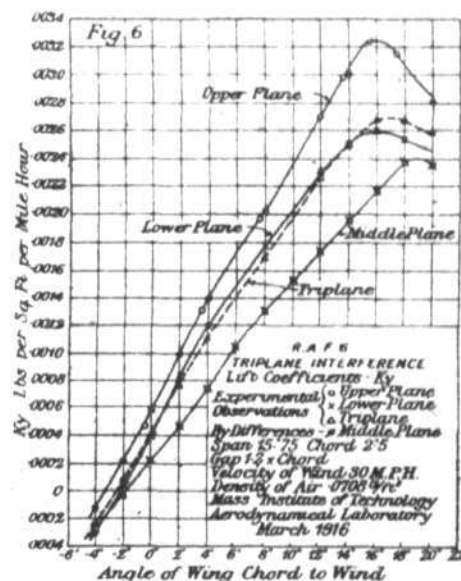


Fig. 5.



velocity of 30 miles per hour; air density, 0.07608 lb. per cub. ft.

Models were mounted vertically on a spindle, with necessary bracing in a manner described previously.† In every case the effect of the supporting apparatus has been determined by separate tests and subtracted, as well as the effect of such struts or wires as were used to ensure parallelism in the biplane or triplane combinations. The results here recorded therefore, apply to the bare aerofoils only.

Biplane and triplane models had a constant gap between planes equal to 1.2 times the chord length, and there was no stagger or overhang.

A single aerofoil was first tested as a monoplane to serve as a standard for reference. The lift and resistance, or "drift," are expressed as lbs. per sq. ft. wing area per mile hour velocity. The coefficients found are in fair agreement with previous tests upon aerofoils of this section made both at Teddington and at this place. The precision of measurements in our wind-tunnel work is better than 1 per cent., but

led to the consideration of wings in a tier of three, or a triplane, to provide the wing area necessary to sustain a great weight at a speed of not more than 50 miles per hour, and at the same time not unduly to extend the span.

The following aerodynamical investigation was undertaken to determine the suitability of the triplane arrangement for weight-carrying as compared with the biplane. It appears that the triplane is not so effective as the biplane, and will require somewhat more power to drive; but with sufficient power the triplane can support nearly the same weight as the biplane at its attitude of maximum lift. The loss is only about 1.1 per cent. At small angles near 4°, for the same

* By courtesy of Engineering.

† Technical Report of the Advisory Committee for Aeronautics, 1912-13, London.

‡ "Stable Biplane Arrangements," *Engineering*, January 7th, 1916, page 1.

minor variations in workmanship of model, too slight to be detected, may lead to discrepancies of the order of about 3 per cent. between the results of tests on two apparently identical models.* The "centre of pressure," defined as the intersection of the line of action of the resultant force on the aerofoil with the plane of the chord, has been found by a graphical construction from the observed force components and the moment about the supporting spindle. In the biplane tests the centre of pressure is taken in the plane parallel to and midway between the planes of the chords of upper and lower wings, and in the triplane tests the centre of pressure is referred to the plane of the chord of the middle wing.

The curves for lift coefficient K_y and drift coefficient K_x , defined by

$$\text{Drift} = K_x S V^2$$

$$\text{Lift} = K_y S V^2$$

(lb.) (sq. ft.) (miles/hour)

are plotted in Fig. 1 with the angle of incidence between the chord and wind direction as abscissa. The coefficients calculated as above from the observed forces are plotted to show the consistency of the observations.

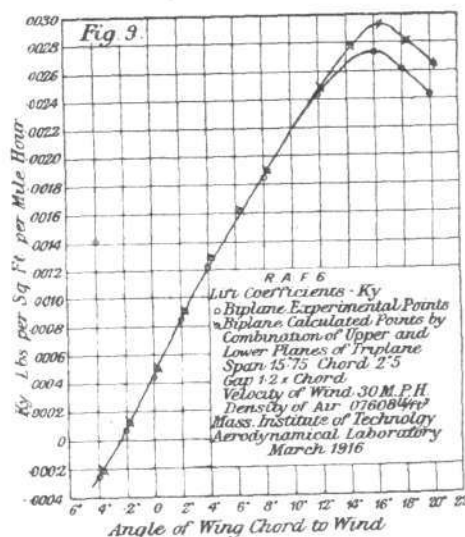
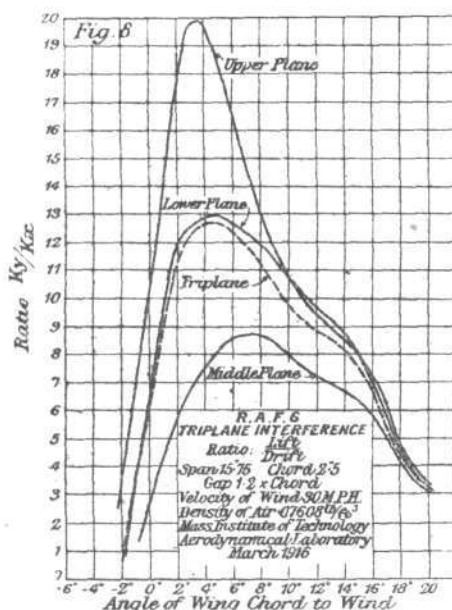
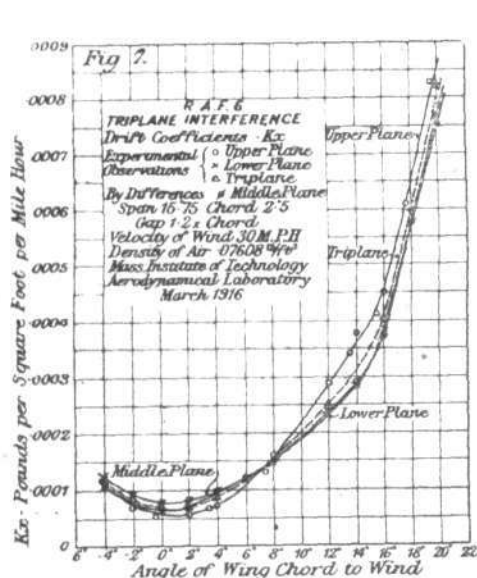
It appears by comparison of the lift curves for the three cases that the triplane and biplane give nearly the same maximum lift at about 16° , but that for smaller angles of incidence the triplane lift is appreciably reduced. Confirming previous tests on biplane *versus* monoplane, we find the lift coefficient for the monoplane superior at all angles above zero. The drift coefficient for angles below 12° is not

i.	Monoplane.		Biplane.		Triplane.	
	Actual.	Percentage.	Actual.	Percentage.	Actual.	Percentage.
	K_{ym}	K_{ym}	K_{yb}	K_{yb}	K_{yt}	K_{yt}
0	0.000486	100	0.000432	88.8	0.000404	83.0
2	0.00103	100	0.000864	83.8	0.000776	75.4
4	0.00145	100	0.00123	85.4	0.00109	75.7
8	0.00218	100	0.00186	85.2	0.00169	77.4
12	0.00278	100	0.00244	87.6	0.00226	81.2
16	0.00277	100	0.00273	98.5	0.00267	96.4
	L/D	L/D	L/D	L/D	L/D	L/D
0	8.6	100	6.3	73.2	6.1	70.8
2	16.3	100	12.2	74.7	11.4	69.8
4	16.8	100	13.8	82.0	12.8	76.1
8	13.8	100	11.3	81.9	11.1	80.4
12	10.0	100	9.5	95.0	8.9	89.0
16	4.5	100	5.6	124.0	6.5	145.0

combinations. The advantage here, if any, is of slight importance, because aeroplanes ordinarily cannot be operated at such great angles of incidence.

Experiments on Curtiss Profile.—To verify the tests just described the work was repeated for a monoplane, biplane and triplane made from an aerofoil cast in type metal, having a profile similar to that at one time employed by the Curtiss Aeroplane Company. This profile differs from the R.A.F. 6, shown in Fig. 3, by the thickness of the edges.

These Curtiss aerofoils were made of the same over-all dimensions as the R.A.F. 6, arranged, as before, with gap 1.2 times chord, and tested in an identical manner. The



greatly different in the three cases, but at very great angles of incidence near 16° , the triplane has a materially lower resistance, and has a real advantage in such a "stalling" attitude.

The curves of ratio lift/drift bring out the relative effectiveness of the wings. Thus the best L/D ratio is 17 for the monoplane, 13.8 for the biplane, and 12.8 for the triplane. These values refer to small angles of attack corresponding to high flight speed. For a large angle of attack, 16° , the ratios are respectively 4.5, 5.6 and 6.5.

The centre-of-pressure curves are plotted for biplane and triplane in Fig. 2. It does not appear that the centre-of-pressure motion is changed in character in going from biplane to triplane. In a previous article in *Engineering*† we showed that the centre-of-pressure motions for the monoplane and for the biplane were nearly identical. The present experiments confirm this conclusion, but the monoplane curve is omitted for the sake of keeping the figure clear.

The annexed table of experimental points brings out the relative values of the coefficients in the three cases taking the monoplane coefficients as standard, and expressing those for the biplane and triplane as a percentage of them.

It may be noted that the drop in lift after passing the maximum is less rapid for the triplane than for the other

results for the monoplane, biplane, and triplane are shown in Fig. 4. These curves are of the same general character as those for R.A.F. 6 given in Fig. 1. We have then confirmation of the conclusions that:—

1. The maximum lift of the triplane is very nearly as great as that of the biplane.
2. At angles of incidence between 2° to 12° the lift and ratio L/D of the triplane are materially less than the corresponding values for the biplane.

Applied to an aeroplane, we should expect to obtain about the same landing speed on given wing area, whether the biplane or triplane arrangement were used. The maximum speed for given engine power would, however, be less for the triplane on account of lower L/D ratio at small angles.

Interference.—Experiments were next undertaken to determine the distribution of load upon the three wings of the triplane made of aerofoils of R.A.F. 6 profile. A special apparatus was designed (Fig. 5) by which two wings of the combination could be supported independently in their proper attitude, while the remaining one was attached to the balance, and its characteristic coefficients found by experiment. It was convenient to measure the lift and resistance components for the upper wing and for the lower wing, as influenced by the others, and then to find the forces on the middle wing by subtraction from the values previously found for the complete triplane.

* Smithsonian Miscellaneous Collections, vol. 62, No. 4, "Characteristic Curves for Wing Section, R.A.F. 6."

† See *Engineering*, January 7th, 1916, page 1.

The results are shown by the curves of Figs. 6, 7 and 8.* It appears that the upper wing is very much the most effective of the three, and that the middle wing is the least effective. The coefficients for the lower wing are very nearly those for the three in combination as a triplane.

To estimate the lift on each wing for use in structural design of the wing girder, we give below a table showing the lift and ratio lift/drift of each wing in terms of the corresponding values for the middle wing taken as unity.

The very poor lift of the middle wing must be caused by interference with the free flow of air due to the presence of the upper and lower wings. It would be reasonable to suppose that the middle wing influences the lower wing to the same degree that the upper wing of a biplane influences the lower wing, and that it influences the upper wing of the triplane to the same degree that the lower wing of a biplane

Angle of Incidence.	Lift Upper.	Lift Middle.	Lift Lower.	L/D Upper.	L/D Middle.	L/D Lower.
0	2.68	1.0	1.82	3.63	1.0	2.30
2	2.14	1.0	1.76	3.18	1.0	2.13
4	1.91	1.0	1.64	2.59	1.0	1.69
8	1.56	1.0	1.36	1.49	1.0	1.37
12	1.56	1.0	1.31	1.30	1.0	1.34
16	1.49	1.0	1.20	1.22	1.0	1.17

influences the upper wing of that combination. Conse-

* Lift/drift plotted from faired curves.

quently, if this reasoning hold, we should expect the sum of the observed lifts on the upper and lower wings of the triplane to be equal to the observed lift on the biplane R.A.F. 6 previously tested.

The observed biplane lift coefficient and the hypothetical biplane lift coefficient, calculated from the sum of the lifts on upper and lower wings of the triplane are plotted in Fig. 9. It appears that for all angles below the critical angle, where the lift coefficient drops off, the discrepancy is slight.

For a given wing profile there is a definite angle of no lift. Our method of measuring wind direction in these experiments admits of a precision of about 0.25° . Since all of our curves are plotted on angle of incidence as abscissæ, they may be moved bodily to right or left 0.25° and still express the results within the limit of precision of the experiments. It has been found necessary to correct the lift curve for the hypothetical biplane in this manner by moving it to the right 0.25° in order to give the same angle of no lift.

The lift coefficient at 16° , the critical angle, is very difficult to determine with any certainty on account of the unstable nature of the fluid motion at this angle. Violent eddy-making begins here, and the balance tends to oscillate unless heavily damped. Excepting at the critical angle, the lift coefficients observed for the biplane and calculated for a similar biplane from the lift on upper and lower wings of triplane, are in such good agreement that we conclude that the curves of Fig. 9 furnish the check and verification desired.

Woman's Long-Distance Flight in U.S.A.

A CABLE message from New York on Monday stated that Miss Ruth Law has created a non-stop flying record by covering 590 miles at an average speed of 103 miles an hour. The previous American cross-country record was 452 miles. Miss Law started from Chicago with the purpose of reaching New York, but had to come down at Governor's Island through lack of petrol. She used a Curtiss Biplane.

The R.F.C. and Captain Boelcke.

AN official telegram from Berlin states that on November 11th an aviator dropped a wreath in the German lines on the Somme to which was attached the following note:—

"In memory of Captain Boelcke, our brave and chivalrous enemy.—The Royal British Flying Corps."

An accompanying letter read:—

"To the officers of the German Flying Corps at this front. We hope you will find this wreath. We regret that it comes so late, but the weather prevented us from sending it earlier. We mourn with his relatives and friends. We all acknowledge his bravery. Please remember the Morane Squadron to Captain Evans and Lieutenant Long."

The wreath and the messages have been sent to the parents of Captain Boelcke.

The French Raid on Munich.

THE expert French commentator writes on November 18th with regard to Capt. Beauchamp's flight over Munich:

"Leaving France in the morning, he flew in broad daylight as far as Munich, where he brought terror to the capital of Bavaria, successfully dropping several bombs on the station."

"Thus the innocent victims of the last bombardment of the open town of Amiens by the Germans have been avenged. Then, turning at right angles towards the south, he flew over the whole of the Tyrol and crossed the Alps to land at length $12\frac{1}{2}$ miles north of Venice in the village of Santa Dona on the small River Piave, having journeyed without stopping a distance of 700 kilometres (437 $\frac{1}{2}$ miles).

"This daring raid proves the mastery which the French air service henceforth possesses, both from the point of view of the quality of the machines and of the ability of the pilots."

"Perhaps in the future the fear of punishment will make the Germans observe the rules of humanity."

The Raid on Padua.

THE Austrian air raid on Padua has drawn from the Pope another strong protest to Austria recalling his former pronouncements against such a brutal system of warfare, which has no military purpose, and only causes suffering to the innocent and unarmed civil population.

Some details of the raid are given by the *Messageo* as follows:—

"The bombs fell in thickly inhabited districts of the town, but, generally speaking, without much hurt to life or property. One very powerful bomb caused havoc at a spot where

about 100 people of the poorer classes, mostly women and children, had sought safety in sheds, having been prevented by the flooding of the Brenta from proceeding to the caves in which they are wont to find refuge. Bursting in their midst, the bomb strewed the ground with shapeless forms, buried beneath the debris of the buildings. By the light of torches the work of rescue was at once undertaken. Up to the present 31 dead bodies have been found—11 men and 20 women."

The German Air Service Reorganisation.

APPARENTLY the "experiment" of placing the German army flying services under one department, which commenced in March last, has justified itself. It is now announced from Berlin that the increasing importance of aerial warfare has made it necessary to combine under one board the entire aerial and anti-aircraft forces of the army in the field and at home.

The uniform development and preparedness of these services have been entrusted to the General in command of the aerial forces. Lieut.-General von Hoeppner, who up to now has been in command of a reserve division, has been appointed General in command of the aerial forces.

German Thoroughness Again.

THE raid on Munich by Capt. de Beauchamp evidently set the German regulation-makers to work, as the *Munchener Neueste Nachrichten* on the following day printed the following police notice in heavy type:—

"Since, in spite of the bad weather, further aerial attacks may be expected, the people are reminded of the precautions to be observed in case of danger." Then follows a series of 93 paragraphs, setting out in detail all manner of precautions to be taken.

Another police notice warns the public that during the day the military authorities will explode one of the bombs which did not go off on falling to the ground.

Another Super-Zeppelin.

If the *Thurgauer Zeitung* is to be credited a new super-Zeppelin has recently been tried over Lake Constance. As far as could be seen from the Swiss shore, the airship has four gondolas, under the foremost of which was suspended a small car apparently intended to be lowered for observation purposes.

It is stated that a defensive armament is installed in chambers built in the sides of the envelope. It is also asserted that at the stern of the vessel was suspended an aeroplane which, on being released, flew away inland.

Russians Bag a Zepp.

ACCORDING to a Reuter message dated November 18th, from Petrograd, the Russians have brought down a large Zeppelin on the south-west front near Sarny. It is stated that they captured the crew of 16, three guns, two machine guns, and nearly 300 kilogrammes (6 cwts.) of bombs.

AIRISMS FROM THE FOUR WINDS

CAPTAIN DE BEAUCHAMP'S 437 mile bombing expedition to Munich and back to Venice was carried out on a British machine.

AFTER all there appears to be nothing in the accusation that electric trams and railway trains give the direction and locality to vagrant Zepps. According to Field-Marshal Commanding-in-Chief of the Home Forces, Lord French, it is confidently believed that it is only necessary to assure the public that the continuance of railway and tramway traffic does not serve as a guide to hostile aircraft, and is of vital importance for the successful prosecution of the war, for them to accept the decision and co-operate in carrying it out with loyalty and patriotism.

COMING from Lord French it *should* be all right, but we hardly follow the *sequiter*. Perhaps if it were put too plainly the enemy might get some tip from it. At least from this pronouncement it would seem as if all the elaborate drawing of railway blinds and the dimming of train lights have been wasted efforts.

GOVERNMENT sea freight insurance and aircraft raid or bombardment insurance are two separate entities. Where the one leaves off the other starts. Which those who have bits and pieces under consignment across the seas would do well to remember, in case they have not taken out the two

covering policies. Directly the goods are out of the ship, should an enterprising Zepp. crew play havoc with them, without the aircraft policy, there'll be nothing doing in the way of compensation. So the only alternative to an air-risk policy is to be ready to tumble the goods back into the ship's hold directly a Zepp. raid alarm is given. Which means some hustle. For ourselves we shall risk the investment in the dual policy scheme.

THE final report of the Air Inquiry which was presided over by Mr. Justice Bailhache, has been in the hands of the authorities for a week or more.

A COUPLE of bars to the D.S.O. is a record to be proud of, on the top of the Military Cross. Heartiest of congratulations to Capt. Albert Ball, Sherwood Foresters and R.F.C., the possessor of these distinctions, upon his investiture by the King last week.

LIEUT. RODERIC HILL, whose very beautiful drawings have been such a feature in the pages of "FLIGHT" in more peaceful times, has again distinguished himself at the front. Since he returned wounded from the front many months ago, and after he joined up with the R.F.C., he has gone through many a good strafing job, and for one of his latest stunts in this direction he has been awarded the D.S.O., his name appearing in our columns this week from the *London Gazette* of November 14th.

CONFETTI thrown from an aeroplane last week was the manner of greeting from his fellow pilots to 2nd Lieut. Charles H. Bell, R.F.C., some time instructor at Hendon Aerodrome, after his marriage at Hendon Parish Church to Miss Daisy Sloan.

THE conquest of the air is revolutionising many preconceived ideas and things in this material world of ours. Through generations it has never been found possible to imbue into the minds of the common or garden pedestrian that by adopting the simple formula of always, within reasonable limits, keeping to the right when passing other folk, the pavement traffic of our streets would get along ever so much more smoothly than the present method of incessant banging against and dodging of one's fellow creatures. The bump of congenital perversity is no doubt prominent in most people of to-day, but the drastic necessities enforced by the present anti-Zepp. illuminating regulations to ensure a safe passage along our thoroughfares at night, may well bring about as a regular habit, what a century of mild request has failed to accomplish. We frankly welcome the notice, therefore, of the Commissioner of Police drawing attention to the fact that "keep to the right" is a recognised rule of the pavement. Our only regret is that there is not some sort of penalty for the roaming idiot who will still insist upon meandering zig-zag across the stream of traffic. That and the casting down haphazard of banana skins should be made criminal in a single clause.

SUCCESS in securing exhibits of surpassing interest has compelled Lady Drogheda to postpone the opening of the exhibition of paintings, prints and photographs of aircraft, past and present. The arrangements entail a deal of labour, and it was, moreover, found that Messrs. Knoedler's gallery in Bond Street was all too small, so that a larger gallery has had to be sought for, and the opening day will be announced presently. Being for the benefit of two such noble funds as the Flying Services Fund and the Irish Hospital Supply Depot work for the British Red Cross, should ensure generous support to Lady Drogheda's well-conceived scheme.

WOULD it have been such a dire calamity after all had the City Fire Brigade, in the event of a Zepp. raid, as suggested by Chief Inspector Hewitt would be the case, smashed up those Gog and Magog bells which bang out their monotonous "tunes" four times an hour, year in and year out? £20



Mr. Sydney Pickles leaving St. James's Church, Piccadilly, last week, with his bride, after the ceremony in the church. Inset is a reflection of the beautiful bride, whose face in our other photograph is unfortunately obscured by her bouquet.

under the conditions of their ringing at night, contrary to the regulations, was a light get-off for the offending company, Sir John Bennett, Ltd., and we would not be surprised to hear that the offenders' neighbours in Cheapside would gladly add another like sum if, upon the next visit of the Zepps. to this country, occasion may be found for the fulfilment of Chief Inspector Hewitt's threat. When Sir John passed away, his *chef d'œuvre* might well have passed with him.

ANOTHER stunt from America is the shooting of wild ducks from aeroplanes. Long Island is the spot where the sport will be in progress during the duck shooting season, and it should prove great practice for aerial gunners and pilots to endeavour to follow the manoeuvres of these very dodgy birds, and bring them to table. Our lower east coast should put up some good sport in this direction for those of our pilots lucky enough to be in the vicinity.

THE London correspondent of a Midland paper, speaking of a machine he saw land in a field near him, says he noticed the number on it was close on 3,000, "and that turned out by one firm only amongst all those engaged in the manufacture of aeroplanes. Then there are the Government factories as well." And concludes by saying, "The total figures should make cheerful reading." In this ratio they certainly should.

LOOKING remarkably fit considering the strenuous time he has had during the past few months, and with his honours thick upon him, Sous Lient. Louis Noel has honoured England by making a bee-line for London to enjoy a few weeks' leave. His holiday has been most thoroughly earned by the hero of the recent Salonica-Sofia-Bucharest bombing expedition.

WHETHER they are all anxious to become aviators or not, there has been an epidemic recently of boys sliding down the Brooklands track behind the aeroplane sheds. Fourteen have recently been before the Woking magistrates charged with being on War Department land without a permit; it cost the three eldest 5s. each, and the rest were told not to do it again.

It is reported that white dogs on leads are being utilised in "Darkest London" by pedestrians with defective sight as a means of giving notice of approach and thereby preventing collisions with passers-by. Lurchers are unpopular. —*Motor News*.

THE announcement of the Secretary of State for War this week relative to the presentation of decorations to the next-of-kin of fallen officers and men, would not have been necessary if the editors of daily journals would read their "FLIGHT." But what about the posthumous award of decorations? Haven't the "difficulties" been overcome yet? Mr. Lloyd George had better get a move on, since the best authorities say the war can't possibly last more than another three years.

TEN YEARS AGO.

Excerpts from the "Auto." ("FLIGHT's" precursor and sister Journal) of November, 1906. "FLIGHT" was founded in 1908.

£10,000 FOR AN AEROPLANE FLIGHT.

The event of the week, unquestionably, is the offer made by the *Daily Mail* of a magnificent prize of £10,000 for the first aeroplane to fly from a point starting within a radius of five miles of the *Daily Mail* office in London to any other point within the same radius of the *Daily Mail* office in Man-



Command of the Air.

COLONEL WILFRID ASHLEY, M.P., chairman of the Parliamentary Air Committee, delivered an address on the "Command of the Air" to a meeting of the members of the 1900 Club on November 15th, presided over by Viscount Peel. Reviewing the development of British aviation during the past five years from the standpoint of national defence, Colonel Ashley paid a warm tribute to the achievements of the R.N.A.S. and the R.F.C. In urging the need for closer co-ordination between the Naval and Military branches of the air service, he said it was important for the vigorous prosecution of the war to secure unified control in all matters relating to design of machines, contracts, stores and the supply of material. He appealed for the full and unqualified support of the country for the Air Board under the presidency of Earl

Chester. No stipulations have been attached to the munificent offer, except that the competition will be confined exclusively to aeroplanes, and that the competitors must be members of some recognised aeronautical club.

THE BROTHERS WRIGHT AWAKE.

According to our contemporary, *Les Sports*, a letter has been received by the French Aero Club from the brothers Wright, containing statements which may be regarded as truly remarkable. It would appear that during the past year they have not been flying at all, but have devoted the whole of their energies to developing a lighter and more suitable motor for use with their aeroplane, and now claim that they have produced a motor giving 28 h.p. and weighing about 3 kilogs. per horse-power. This is much more powerful than the motor they previously employed, and they estimate that they will be able to carry two men with it, and to travel at 70 kiloms. per hour.

THE FRENCH WAR OFFICE AIRSHIP "LA PATRIE."

The great airship "La Patrie," which has been built by the Brothers Lebaudy to the plans of M. Julliot for the French War Office, made its first trip on the 16th inst., when it went out with a crew of six people, including Lieut. Bois, of the Aeronautical Department of Chalais Meudon, who was in charge. She was started off in the direction of Bonnières, and turned successfully in spite of a considerable wind. She circled round the village of Lavacourt at a speed of 15 miles an hour, then moved along the hills bordering the Seine and returned towards Moisson, stopped dead some 200 ft. above the shed, and settled down quietly having been 2 hours and 20 minutes in the air.

AERIAL WARFARE.

A lecture was delivered by Colonel Fullerton, R.E., at the Royal United Service Institution on Thursday evening of last week on the prospects of flying machines for military purposes.

"There was no doubt," said Colonel Fullerton, "that in the next great war flying machines would be regularly employed (1) against other airships, (2) against sea forces, and (3) against land forces. The object of each side would be in the first instance to obtain command of the air by purely aerial warfare, and for this they would maintain a high-speed flying machine armed with light guns. The aerial battles would practically settle the first period of the campaign.

"Against the enemies' navies flying machines would be chiefly used for reconnoitring, but probably efforts would be made by firing special projectiles, more or less vertically downwards on to the decks, to inflict actual injury on the vessels. Location and destruction of submarines would also be a special function of the airship, as from a position high in the air objects 30 or 40 ft. below the water can readily be detected.

"The use of aeroplanes against land forces would involve, of course, reconnoitring as a principal duty, but depôts might be set on fire, mounted troops attacked, and horses stampeded.

"At present it would appear desirable to construct machines weighing up to 1,000 lbs. for one passenger, with a speed of 30 miles an hour, and, say, about 25 h.p. for two passengers weighing up to 1,500 lbs., with horse-power up to 30, and a larger type weighing up to 10,000 lbs., and with horse-power from 250 to 300 capable of travelling at 40 miles an hour. It is these last that would be suitable for military reconnoitring work.

"At present it appeared doubtful whether the flying machine could be employed for commercial purposes."



Curzon, and said that until large executive powers were conferred upon the Air Board by the Government, aircraft as an essential part of our war organisation could not achieve its highest point of efficiency. He expressed deep regret that difficulties had been placed in the way of a great unified air service by the Board of Admiralty, and he sincerely hoped that the Prime Minister and First Lord of the Admiralty would realise the importance of a full recognition of the functions of the Air Board by the Board of Admiralty at the earliest moment.

He said he was satisfied that the Air Board should include a representative of the Ministry of Munitions, and he added that in the view of the Parliamentary Air Committee it would be entirely to the advantage of the Royal Naval Air Service if an Air Lord were added to the Board of Admiralty.

PERSONALS

Casualties.

Second Lieutenant T. E. BARTON, R. Irish Rifles, who was reported missing, is now officially reported killed. He was the youngest son of the late Charles W. Barton, and Mrs. Barton, of Glendalough House, Annamoe, Co. Wicklow, and was educated at Fettes and Cambridge University. He enlisted in the R.N.A.S. soon after the outbreak of war, and served in Gallipoli in the Armoured Car Section. In December, 1915, he obtained a commission in the R. Irish Rifles, and went to the front on May 15th. He was killed at the head of his men while leading a charge.

Second Lieutenant CHARLES E. MACRAE, Seaforth Highlanders, attached R.F.C., killed, was the third son of the Rev. Donald MacRae, B.D., parish minister of Edderton, who is at present on service as a military chaplain, and has had three sons in the Army. At the outbreak of war he was in the Seaforths. About a year ago he was commissioned lieutenant, and some months ago transferred to the R.F.C.

Flight Sub-Lieutenant F. A. RIVERS MALET, R.N. (accidentally killed in the great operations in the air last week), belonged to families whose members have been long associated with the service of the Crown, including Sir Edward Malet, formerly Ambassador at Berlin, and Admiral Sir Reginald Bacon, commander of the famous Dover patrol. His father is Lieutenant H. Rivers Malet, R.N., and his mother is a daughter of the late Major King, Royal Scots Greys. He was born in India, and educated in South Africa and King's School, Worcester. He entered the firm of Messrs. Green, ship engineers, and afterwards went to Cornwall for marine salvage work, and became a member of the Cornwall Fortress R.E.

He went to British Columbia in 1913 for salvage work, and joined the Canadian Naval Forces, but on war breaking out he enlisted in the 48th Highlanders of Canada as a motor cyclist, and served in Lord Brooke's Brigade. Early this year he was transferred to the Navy owing to his knowledge of engines and motors, qualified as a pilot, and was sent to Dunkirk, where he had many successful fights and flights. Recently he dropped in the North Sea, and was rescued by a destroyer, and on another occasion he put to rout a big aeroplane which had greater speed and armament than his own. His brother is also a flight lieutenant. The funeral took place at Chatham with naval honours.

The death is announced of Second Lieutenant LAWRENCE HILL WILSON M'KISACK, 5th (Royal Irish) Lancers, attached R.F.C., who was killed at Thetford, Norfolk, on the 13th inst., as the result of an aeroplane accident. Deceased was the elder son of Dr. and Mrs. H. L. M'Kisack, 88, University Road, Belfast, and was 23 years of age.

Second Lieutenant HENRY JOSEPH NEWTON, Cheshire Regiment, attached R.F.C., was reported missing on August 2nd, but news of his death on that date has now been received through the Red Cross at Geneva. The younger son of Mr. and Mrs. A. Newton, of 37, Netherhall Gardens, Hampstead, he was educated at University College School, where he was a monitor, a colour-sergeant in the O.T.C., and a member of the Bisley VIII. and of the first XV. He held the challenge cup for boxing from 1908 till 1914. In July, 1914, he matriculated at London University, and on the outbreak of war he immediately offered his services. After serving as sergeant in the 12th London Regiment, he was gazetted Second



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SOME PUPILS WHO HAVE RECENTLY SECURED THEIR CERTIFICATES AT THE RUFFY-BAUMANN SCHOOL.—1. Messrs. Tom West. 2. E. Hayes. 3. T. Williams. 4. J. Trubridge. 5. D. Barnes. 6. J. Holmes. 7. E. S. W. Fanshawe. 8. G. Durand.

Lieutenant in that battalion in September, 1914, and went to the front on Christmas Day. In the following February he received his second star. He was wounded at Ypres in May, and soon after his convalescence resigned his commission and went to Sandhurst, where he became a sergeant. In November he was appointed a Second Lieutenant in the Cheshire Regiment, and was attached to the R.F.C., going to the front as an observer in May, 1916. He would have reached his 20th birthday on August 6th.

Second Lieutenant W. A. M. NIVEN, R.F.C., reported killed on October 28th, was the eldest son of Mr. A. Y. Niven, of Johannesburg, and grandson of the late Mr. A. M. Niven, of Glasgow. When war broke out he enlisted in the Transvaal Scottish, and went through the German South-West African campaign under General Botha. Early this year he came to England, and, obtaining a commission in the R.F.C., served at the front until he was killed.

Missing.

Lieutenant A. ANDERSON, Connaught Rangers and R.F.C., reported missing, is the only son of Professor Alexander Anderson, M.A., LL.D., a native of Camus, Coleraine, who

has been President of the Queen's (now University) College, Galway, since 1899.

Lieutenant TREVOR MOURTRAY BENNET, M.C., Royal Irish Rifles, attached R.F.C., missing, believed killed, was the son of Mr. James Bennet, Belfast. He obtained his commission two years ago. Quite recently he joined the Flying Corps, and on the 10th inst. took part in a thrilling combat near the British lines.

Lieutenant JOHN H. LOWSON, R.F.C., previously reported missing during an aerial raid over the German lines, is now officially reported wounded and a prisoner at Osnabruck. He is a son of the late Mr. W. B. Lowson, a well-known Belfast stockbroker, who resided in Chichester Park Villas, Antrim Road, and of Mrs. Lowson, now of 7, Great Stuart Street, Edinburgh.

Married and to be Married.

A marriage is arranged, and will shortly take place, between EDMUND WILFRID SHARPE, Yeomanry, attached R.F.C., youngest son of Mr. Edmund Sharpe and Mrs. Sharpe, of Halton Hall, Lancaster, and ELEANOR ALICE ("NOREEN"), eldest daughter of Mr. W. H. PERSSE and Mrs. PERSSE, 44, Craven Avenue, Ealing.



If in doubt about anything aviatric, write to "FLIGHT" about it.

J. R. K. (Newcastle).

In machines in which the machine gun is fired "through" the propeller, the gun is fixed in relation to the machine, i.e., it cannot be swivelled either in a horizontal or vertical direction. It is usually mounted just above the top of the fuselage, pointing straight forward. During a spurt it would obviously happen occasionally that one of the propeller blades was in line with the trajectory of the machine gun projectiles. As a matter of fact this happens less frequently than one would expect, the proportion of bullets which hit the air screw being only in the neighbourhood of 3 per cent. Still, those 3 per cent. would of course soon destroy the screw, and to guard against this a comparatively narrow band of armour plating is put on the propeller blade where it is in line with the gun, and the projectiles then strike this armour and are deflected without doing any damage. You are quite wrong in supposing that the lower surface of an aerofoil does most of the work, and we cannot imagine the author of a modern book on aerodynamics stating that this is so. As a matter of fact, wind tunnel experiments show that the upper surface of an aerofoil contributes about three-quarters of the total force normal to the chord. The small air screw you have noticed on several machines is probably driving the oil pump. On some German machines a similar air screw is used for generating the current for the wireless set, but this is a somewhat inefficient method, as the drive is less positive than a direct drive from the engine. The small tube facing forward, and which leads to the pilot's cockpit, is called a Pitot tube, and serves to indicate the air speed of the machine. Your last question is not quite clear, but we take it that your difficulty is, having found the resistance in lbs. at a certain speed, to find the resistance at any other speed. For practical purposes it is sufficiently accurate to assume that the resistance increases as the square of the speed. In other words, suppose that the resistance of an aeroplane is 300 lbs. at 60 m.p.h., and you wish to find what the resistance will be at, say, 100 m.p.h. Then, as the resistance is assumed to increase as the square of the speed, we have the proportion $300 : 60^2 = x : 100^2$, from which $x = \frac{300 \times 10,000}{3,600} = 833\frac{1}{3}$ lbs.

H. S. (Birmingham).

We do not know of any recent experiments with the man-driven aeroplane. Some years ago a competition was held in France, but neither of the competing machines succeeded, if our memory serves us right, in leaving the ground for more than a short hop, which would in all probability have been equally easily accomplished without any wings of any sort on the machine. We do not think that there is any hope

whatever of realising man-driven flight on the principles on which the aeroplane, as we know it, is built.

4084 (R.F.C.).

The letters B.E. originally stood for Blériot Experimental, and indicated a type in which the screw was placed in front and the tail carried on a fuselage. People with a facetious turn of mind have been known to assert that B.E. meant bits of everything, but this is not confirmed. F.E. originally meant Farman Experimental, and were the class letters, so to speak, of the "pusher" type. They are now generally taken to mean Fighting Experimental. R.E. has, as far as we know, always stood for Reconnoitring Experimental.

T. S. (Bournemouth).

It is not usual to glue the ribs on to the spars, but merely to fasten them with screws. Sometimes a little glue is used for assisting the screws in securing the ribs to leading and trailing edges. In some machines the wiring plates and eye bolts are put on the outside of the fabric, as in the B.E. and Avro, while in others the fabric is put on top of the fitting, which has only the strut socket and flange of the wiring plate projecting through the fabric. This latter method is, we believe, employed on the Sopwith machines. The covering is usually done by sewing together strips of the fabric until this is large enough to cover both sides of the wing, and is then tacked to the trailing edge, taken across the wing round the leading edge and back to the trailing edge, where it is stitched. The fabric should be pulled tight from the ends of the wing in order to get it to follow the curve of the ribs. Frequently the fabric is attached to the ribs by stitches of No. 1 kite cord around the rib with about 3 ins. pitch. An upholsterer's needle will be found to be handy for this purpose. When the stitching is complete the stitches are covered up with 1 in. white seaming tape, solutioned on. So far as we know, there are no books dealing with subjects such as these, which can really only be picked up by practical experience.

R. L. A. (Chorley).

We regret that neither time nor space will allow us to answer your first question, as this would entail getting out three different complete designs, at least complete as regards general arrangement, which would entail days, possibly weeks, of work. The petrol consumption of an aero engine may be taken roughly as 0.075 gallon per b.h.p. hour.

A. L. H. (Colwyn Bay).

The only machine to complete the full course at Chicago in 1912 for the Gordon-Bennett Aviation Trophy was the Deperdussin piloted by Jules Vedrines. His time for the 200 kiloms. was 1 hr. 10 mins. 56 secs. The rotary engine fitted to some of the Fokkers is the Oberursel, a German copy of the Gnome.

AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

British.

Cairo, November 13th.

"In revenge for the raid which was carried out by 12 of our aeroplanes at Beersheba and Maghdaba on Saturday last, when they seriously damaged some military establishments, which, naturally, were the sole objects of attack, one hostile machine this morning dropped nine bombs on the business and residential quarters of Cairo. The enemy thus adheres to the principle of directing attacks, not on military targets, as prescribed by international law, but on dwellings and on the persons of the inoffensive civil population."

War Office, November 14th.

"*Egypt.*—Yesterday an enemy aeroplane flying very high dropped several bombs in and about Cairo, killing and wounding a number of civilians. No military damage was done, and only one military casualty was incurred."

[It was announced in Cairo that 14 persons, including four Europeans, were killed, and 25, including four Europeans, were injured.]

War Office, November 15th.

"*Egypt.*—A further air attack was undertaken to Maghdaba during the night of the 14th. The enemy was completely taken by surprise, and our machines, descending to a very low altitude, dropped 400 lb. of explosives on the camp and storehouses, causing considerable damage. Our machines have returned safely."

General Headquarters, November 15th, 10.3 p.m.

"Yesterday our aeroplanes did much useful work. Last night they made successful bombing attacks on an enemy aerodrome and railway lines, stations, and rolling-stock."

Admiralty, November 15th.

"During the early hours of this morning the harbours and submarine shelters at Zeebrugge and Ostend were again heavily bombed by squadrons of naval aeroplanes and seaplanes. Direct hits were observed in the Atelier de la Marine and in close proximity to the power station. A large fire, probably emanating from a petrol store, was also observed. All machines returned safely."

War Office, November 16th.

"*Egypt.*—The General Officer Commanding-in-Chief, Egypt, reports that aircraft successfully bombed Maghdaba, Anja, and Kossaima on the 15th. All the machines returned in safety."

General Headquarters, November 16th, 9.25 p.m.

"Yesterday our aeroplanes carried out several successful bombing raids. One hostile machine was driven down damaged."

Admiralty, November 17th.

"A successful raid was made on Ostend and Zeebrugge this morning (17th inst.) by British naval aeroplanes and seaplanes. A considerable weight of bombs was dropped with good results on the docks and shipping. All machines returned safely."

"With reference to the raid reported in the French *communiqué* on October 25th, when 11 British naval aeroplanes, accompanied by five French machines, bombed the Essingen Works at Hagendingem, a fuller report has now been received, from which it appears that considerable damage was done. The objective consisted of blast furnaces and steel works, and was therefore of especial interest from a naval point of view, as the steel which is produced there is used in the construction of big guns. According to the reports of the pilots, only two factory chimneys were left intact after the last bombs had been dropped, and therefore, although it is possible that part of this factory may be in working order again shortly, the greater part of the works attacked will be out of action for some considerable time."

General Headquarters, November 17th, 9.16 p.m.

"Yesterday much successful work was accomplished by our aeroplanes. Two important junctions on the enemy's lines of communication were bombed, and railways, billets, and aerodromes were attacked with bombs and machine-gun fire both by night and day. The enemy aircraft showed more enterprise than usual, with the result that three of his machines were brought down on our side of the line and two on his side, and at least five more were driven to the ground in a damaged condition. Three of our machines are missing."

War Office, November 18th.

"*Mesopotamia, Euphrates Line.*—On the 13th inst. British

aeroplanes again attacked a hostile gathering near Al Ain, nine bombs exploding in the enemy's camp."

"*Tigris Front.*—On the 12th inst. an enemy aerodrome in the neighbourhood of Kut-el-Amara was bombarded, 16 bombs being dropped with good effect."

"*Egypt, Saturday.*—The General Officer Commanding-in-Chief, Egypt, reports:—

"A surprise attack by aircraft was made on the enemy camp at Masad (five miles west of Arish) on the morning of the 17th; 800 lb. of explosive were accurately dropped on the tents with great effect. Our machines have all returned."

"*Salonica.*—Our airmen successfully bombed the enemy's camp north-east of Seres."

General Headquarters, November 18th, 10.50 p.m.

"Yesterday there was much fighting in the air. In one protracted combat between five of our machines and eight of the enemy's, one hostile machine was destroyed and the rest dispersed. In other encounters seven hostile machines were driven down damaged. Three of our machines are missing."

Admiralty, November 20th.

"On November 18th British seaplanes and aeroplanes, operating against the Bulgarian coast, successfully bombarded Karjani, Pravishtia, and Senultos."

French.

Paris, November 16th.

"Yesterday one of our pilots brought down an enemy machine near Chaulnes."

Paris, November 17th.

"Our guns forced two aeroplanes to come down in our lines, one the day before yesterday, south of Attichy, and the other yesterday, near Roye-en-Matz. The aviators were taken prisoners."

"Yesterday our aircraft in the region of Amiens fought 54 fights, in the course of which Lieut. Heurteaux brought down his 13th machine, and 2nd Lieut. Guynemer his 21st."

"During the night several bombardments were carried out, notably against the railway station and works of Esch-sur-Alzette (Luxemburg) and the aviation park of Tergnier. Over 1,500 kilogrammes (1½ ton) of bombs were dropped."

"Flight Capt. de Beauchamps ascended at 8 o'clock this morning for a flight to Munich. Arriving about noon over that town, he dropped several bombs on the station as a reprisal for the bombardments of the open town of Amiens, carried out by the Germans within the last few days. He afterwards landed at Santa Dona di Piave (in Italy, 12½ miles north of Venice), after crossing the Alps. He thus covered a distance of 700 kilometres (437½ miles)."

Paris, November 18th.

"On the 16th inst. one of our machines, carrying Sub-Lieut. Pilot Loste and Quartermaster Machine-gunner Vitalis, brought down, on the Somme front, a German aeroplane. This is the fifth machine brought down so far by these two airmen."

"On the 17th two German aeroplanes were brought down by our pilots. One of these fell in flames near Hallui; the other was destroyed by Adjutant Tarascon, who thus gained his eighth victory, and fell near Manancourt (Somme region). Two other German machines were brought down in aerial duels north of Fouquescourt, south-west of Vouzières, after a lively engagement. One of our pilots used his machine-gun at very close quarters upon a German machine, one of whose wings became detached, and the machine crashed to earth in the region of Marvaux. Finally, a sixth enemy aeroplane, attacked by one of ours, fell in flames in the region of Vieville-en-Have."

"Last night one of our air squadrons dropped 157 bombs on the enemy aerodromes at Golancourt (Oise) and Griselles (Aisne)."

"Twenty-two British naval aeroplanes at daybreak yesterday bombarded the electric power-stations and the naval workshops at Ostend. They dropped 180 bombs, many of which reached their objectives. Another bombardment was carried out by hydroplanes against the Zeebrugge jetty. All the machines returned safely."

"*Salonica.*—British airmen bombarded enemy camps near Seres, while ours dropped bombs on bivouacs and camps at Novak and Monastir."

Paris, November 19th.

"It is confirmed that on November 16th Warrant Officer Dore brought down his sixteenth German aeroplane. The German machine fell near Marche le Pot (Somme)."

Belgian.

Havre, November 18th.

"Our air squadrons carried out night bombardments of the enemy works at Lokeren and on the aerodrome at Ghisteltes."

Italian.

Rome, November 14th.

"Hostile aircraft attempted to make raids over our territory with great persistence, but were driven off by the fire of our anti-aircraft batteries and aeroplane attacks. In the Upper Vanoi valley an enemy squadron succeeded in dropping bombs on Canale San Bovo, killing two soldiers and some animals."

"On the evening of the 12th enemy seaplanes dropped bombs on Ravenna, Pontelagoscuro, Polesella, Magnavacca, Ariano, and Polesine. There were no casualties or damage. Air raids on Romans, Vermigliano, and Doberdo yesterday were equally fruitless. An enemy aeroplane attempted to attack one of our observation balloons, but was hit by our artillery, and fell in over the enemy's lines near Nabresina."

Rome, November 15th.

"During the night of November 14th-15th enemy seaplanes dropped bombs round Aquileia, killing two soldiers and wounding four women and children. After this Italian air-

craft promptly attacked the floating hangars of the aggressors at Prosecco and on the pier at Trieste, both of which were bombarded with marked success. Enemy aeroplanes were active in the Gorizia area, but no damage was done by their bombs."

Rome, November 16th.

"On the Carnia front enemy aircraft dropped bombs on Stazione Carnia without causing harm, and on Moggio Udinese, killing two women and wounding three."

"Enemy aeroplanes dropped bombs in the Vallone (Carso) without doing damage."

German.

Berlin, November 14th.

"During the month of October our flying corps, with great success, has splendidly carried out its heavy and manifold duties on the Western front. Special recognition and thanks are due to the airmen engaged in artillery and infantry observation. Their effective protection was assured by the battle airmen, who also splendidly carried out their special tasks, and by the fire from our anti-aircraft guns."

"We lost 17 aeroplanes, while our enemies in the West, the East, and in the Balkans lost 104 aeroplanes. Of these 83 were lost in aerial fights, 15 by being hit by anti-aircraft guns, and six by forced landings behind our lines. Sixty enemy aeroplanes are in our possession. On the other side of the line 44 can be seen which have fallen to earth."

SIDE-WINDS.

"It's a way they have in the Navy," as the old song says, and the R.N.A.S. is imbued with the same spirit, whether at

work or play, as the recent concert at Lime Grove Hall bears witness. Organised by the ratings at the White City and Wormwood Scrubs Depôts, a sum of no less than £186 4s. 9d. was raised, £100 going to the Flying Services Fund, administered by the Royal Aero Club, and the remainder to the Trafalgar Orphan Fund. C. P. O. Bullimore was the leader in the organising, and the result is eloquent testimony not only to his own labours but also to the enthusiasm with which he inspired his band of helpers, while splendid assistance was given by the ladies from the Administration offices in the selling of programmes. The full band of the R.N.D. was in attendance, and was much appreciated.



C.P.O. Bullimore, who put in such good work organising the R.N.A.S. concert which raised £100 for the Flying Services Fund.

SINCE acquiring their new premises at 179, High Road, Kilburn, the Central Aircraft Co., which is the aviation branch of the old-established firm of R. Cattle, Wybert Street, Stanhope Street, N.W., have gone ahead in remarkable style. Although it is only a matter of weeks since the place, then a builder's yard, was taken over, work is in full swing in the various shops, and the constant humming of the many spindles and the buzzing of the saws witness in most convincing fashion to the amount of work in hand. All the shops are light and airy, and a steam boiler, which was used by the previous occupiers for power generation, now provides the steam necessary to heat all the various departments. A doping shop is nearing completion, and excellent results are confidently expected from the new scheme of ventilation which is being employed. Visitors to the works cannot but be impressed by the very fine workmanship of the woodwork turned out by the Central Aircraft Co., a fact which is evidently becoming more and more widely known among British aircraft constructors, judging by the orders on hand. What particularly impressed us on a recent occasion was the high quality of the spindling; such parts as I-section wing spars being so neatly spindled that the wood was absolutely smooth at both ends of the spindled portions and not torn up and left ragged where the cutters had gone against the

grain. Again in the matter of struts, it was noticed that practically all the shaping was done by machinery, leaving practically nothing to be finished off by hand. The advantage of this is obvious, since, once the cutters are right, all struts will be identical, which cannot be the case where a great portion is worked up by hand. Mr. A. Cattle, ably assisted by his works manager, Mr. C. Borthwick, are to be congratulated, not only on the extension of the business, but on the quality of the work turned out, and manufacturers with sub-contracts to place for wood parts such as wings, skids, struts, or spars, should get into communication with the Central Aircraft Co.

SOME very interesting possibilities are on the boards—drawing boards—at the Wells Aviation Co., Chelsea, a firm which, under the direction of men of enterprise and broad vision, long ago left behind its small, very small, beginning and is rapidly mounting to a place of considerable importance in the industry. With a firm belief in the future of aviation those in charge of the company's destinies are determined to keep going ahead, and they will be well worth watching. Already they have built up an enviable reputation for workmanship, and as the designing department includes several men with ideas, some business on original lines may be looked for.

THE gallantry of Mr. M. G. Smiles in his plucky attempt to rescue the boy who was unfortunately drowned in the Silk stream at Hendon on September 6th is not to be forgotten, the Royal Humane Society having awarded their honorary testimonial inscribed on vellum.

FOLLOWING on the marriage of Mr. Sydney Pickles and Miss A. R. E. Marks, as reported in last week's "FLIGHT", comes a letter from Devonshire where the pair are spending their honeymoon. It is to be hoped that the weather in that sunny county is something better than that which we are experiencing here at the present moment. By the way, what a lot of converts that fabulous deity Hymen is discovering amongst aviators these days.

IT came as a surprise, the news that Marcus D. Manton had left the Grahame-White company after so many years at Hendon, and had joined up with J. Samuel White and Co., of Cowes, as test pilot for the machines of their manufacture. His many old friends will miss his cheery personality, but one and all will wish him success in his new position. Testing machines must be far more interesting than instructing pupils in the art of flying, though there certainly must be many scores of pilots now on active service who owe their skill to the patient and painstaking tuition of their former instructor.

COMPANY MATTERS.

A. Darracq and Co. (1905), Ltd.

THE directors, in submitting to the shareholders the balance-sheet and profit and loss account at September 30th, state that the accounts show a net profit for the year of £90,538 12s. 3d. after writing off depreciation of buildings and other charges shown in the profit and loss account. This net profit, added to the sum of £12,472 19s. 5d. brought forward from last year, gives a total to the credit of profit and loss account of £103,011 11s. 8d.

After payment of £15,000 to the debenture service fund and the half-year's dividend at the rate of 7 per cent. per annum on the preferred ordinary shares, distributed on April 1st, 1916, amounting to £13,125, there remains a balance to the credit of profit and loss account of £74,886 11s. 8d.

The directors have transferred £20,000 to reserve account (making the same up to £170,000), and after providing for the dividend on the preferred ordinary shares, paid October 2nd, 1916, which amounted to £13,125, they now propose to declare a dividend at the rate of 9½ per cent. on the ordinary shares, which will absorb £26,125, and to carry forward the sum of £15,636 11s. 8d. to next year's account.

The goodwill account (which originally stood at £416,123 7s. 2d.) has now been eliminated from the balance-sheet.

The outstanding debenture bonds (which originally stood at £150,000) amounted at September 30th, 1916, to £49,800, and these have now been repaid at par.

In accordance with the proposal communicated to the shareholders, and approved by them at the last annual general meeting, the transfer to a French company of French assets (land and buildings being made the subject of lease) has been completed.

As a logical sequence to this transaction, a similar transfer of the Fulham and Bond Street assets has been made to an English company formed to acquire them.

The position of this company has therefore become that of a company holding share interests in the capital of these companies, which are respectively named Société Anonyme Darracq and Darracq Motor Engineering Co., Ltd.

The main sources of revenue of this company are the dividends declared by the companies named. In the case of the Société Anonyme Darracq, an interim dividend amounting to 20 per cent. was paid in April, 1916, but the accounts for the full year's trading of that company have not yet been completed. In the case of the Darracq Motor Engineering Co., Ltd., a dividend at the rate of 6 per cent. has been received.

The directors have deemed it prudent to transfer from the balance otherwise available for distribution the sum of £20,000 to reserve, and shareholders will notice with satisfaction that, in addition to the extinction of the debenture and goodwill items in the account, their holdings are protected by the possession of a general reserve of £170,000.

The Sunbeam Motor Car Co., Ltd.

THE directors, in advising the shareholders at the annual general meeting on November 28th, state that as the amounts payable to the Government for excess profits duty and under the Munitions of War Act have not yet been ascertained, they will be quite unable to present a balance-sheet which could be certified as correct. As soon as the figures have been ascertained the usual statement of accounts will be forwarded to members.

The directors, however, state that the volume of business done during the year has been greater than in any previous year of the company's history, and they are satisfied that the retainable profits allow them to recommend the following appropriations:—(1) To confirm dividend on preference shares paid April 15th, 1916, £900; (2) to confirm interim dividend paid on ordinary shares April 15th, 1916 (free of tax), £12,000; (3) to pay the balance of dividend on preference shares, £900; (4) to pay a dividend of 10 per cent. (free of tax) upon the ordinary shares, making with the dividend already paid 15 per cent. for the year, £24,000; (5) to pay a bonus of 3s. per share upon the ordinary shares (free of tax), £36,000; (6) to place to the staff bonus fund, £5,000.

PUBLICATION RECEIVED.

Fascicule Relatif a une Nouvelle Détermination des Valeurs des Puissances Dans les Essais d'Helices.

FROM THE BRITISH FLYING GROUNDS.

Grahame-White School, Hendon.

STRAIGHTS with instructor last week: Messrs. Balden, Colman, Fielding and Nightingale. Circuits with instructor: Messrs. Flynn, Pearman; Kaizer, Munro, Sutherland and Travers. Circuits alone: Messrs. Hitchcock, Lord, Ransom, Rogers, Norris and Steeves.

Bournemouth School.

PUPIL with instructor last week: Mr. Ross. Pupils rolling alone: Messrs. Vermorel and Fisher. Straights alone: Messrs. Ross, Hall and Peat. Half circuits alone: Mr. Allen. Figures of eights or circuits alone: Messrs. Burry and Holland. Instructors: Messrs. E. Brynildsen and H. Smith.

Several passengers were carried during the week by Mr. Brynildsen.

35, 45 and 60 h.p. Caudrons in use.

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NEW COMPANIES REGISTERED.

AIR NAVIGATION CO., LTD.—Capital £240,000, in £1 shares, acquiring the business carried on by Louis Blériot at Brooklands, Weybridge, Surrey, as L. Blériot Aeronautics. First directors: L. Blériot, N. A. Chereau (managing director) and R. Todd.

HAMPSHIRE AIRCRAFT CO., LTD.—Capital £100, in £1 shares. Directors: F. J. Privett and Mrs. N. M. Privett, both of Southsea.

□ □ □ □ □

Aeronautical Patents Published.

Applied for in 1915.

- 14,694. G. CAPRONI. Flying machines.
15,866. E., H. L. AND H. O. SHORT. Safety belts.
Published November 16th, 1916.
13,933. W. F. LUFF AND A. W. TURNER. Aircraft.
15,085. T. SLOPER. Hydro-aeroplanes.
15,135. E. LAZARTE. Anti-aircraft guns, and mountings therefor.
15,746. O. SCHÜLE. Maintaining lateral balance of flying machines.

Published November 23rd, 1916.

- 15,290. A. A. HOLLE, JUDGE AND VARIOPLANE CO. Planes.
15,504. C. A. WRAGG. Planes of aeroplane, airships, &c.

Applied for in 1916.

The numbers in brackets are those under which the specifications are printed and abridged, &c.

257. A. GLISSENTI. Improving output of power from screw propellers. (101,806.)
5,349. BLACKBURN AEROPLANE AND MOTOR CO. AND R. BLACKBURN. Safety belts for aviators. (101,833.)
Published November 16th, 1916.
6,062. A. V. ROE. Aviators' belts, &c. (101,765.)
Published November 23rd, 1916.
6,165. D. C. M. HUME. Model aeroplanes. (101,927.)

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